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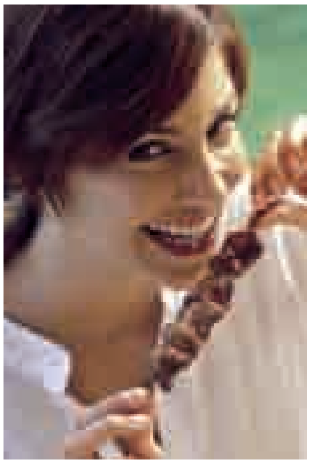
Community Summary Report

Trends and Sources of Zoonoses and Zoonotic Agents in the European Union in 2007



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efsa European Food Safety Authority

ecdc European Centre for Disease Prevention and Control

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THE COMMUNITY SUMMARY REPORT | 1

Trends and Sources of Zoonoses and Zoonotic Agents in the European Union in 2007

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About EFSA

The European Food Safety Authority (EFSA), located in Parma, Italy, was established and funded by the European Community as an independent agency in 2002 following a series of food scares that caused the European public to voice concerns about food safety and the ability of regulatory authorities to protect consumers.

EFSA provides objective scientific advice on all matters, in close collaboration with national authorities and in open consultation with its stakeholders, with a direct or indirect impact on food and feed safety, including animal health and welfare and plant protection. EFSA is also consulted on nutrition in relation to Community legislation.

EFSA's work falls into two areas: risk assessment and risk communication. In particular, EFSA's risk assessments provide risk managers (European Union (EU) institutions with political accountability, i.e. the European Commission, the European Parliament and the Council) with a sound scientific basis for defining policy-driven legislative or regulatory measures required to ensure a high level of consumer protection with regard to food and feed safety.

EFSA communicates to the public in an open and transparent way on all matters within its remit.

Collection and analysis of scientific data, identification of emerging risks and scientific support to the Commission, particularly in the case of a food crisis, are also part of EFSA's mandate, as laid down in the founding Regulation (EC) No 178/2002 of 28 January 2002.

About ECDC

The European Centre for Disease Prevention and Control (ECDC), an EU agency based in Stockholm, Sweden, was established in 2005. The objective of ECDC is to strengthen Europe's defences against infectious diseases.

According to Article 3 of the founding Regulation (EC) No 851/2004 of 21 April 2004, http://ecdc.europa.eu/en/About_us/Key_documents/, ECDC's mission is to identify, assess and communicate current and emerging threats to human health posed by infectious diseases. In order to achieve this mission, ECDC works in partnership with national public health bodies across Europe to strengthen and develop EU-wide disease surveillance and early warning systems. By working with experts throughout Europe, ECDC pools Europe's knowledge in health so as to develop authoritative scientific opinions about the risks posed by current and emerging infectious diseases.

About the report

EFSA is responsible for examining the data on zoonoses, antimicrobial resistance and food-borne outbreaks submitted by Member States in accordance with Directive 2003/99/EC and for preparing the Community Summary Report from the results. Data from 2007, in this Community Summary Report, was produced in collaboration with ECDC that provided the information on zoonoses cases in humans. The Zoonoses Collaboration Centre (ZCC - contracted by EFSA) in the National Food Institute, the Technical University of Denmark assisted EFSA and ECDC in this task.

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Zoonoses are infections and diseases that are transmissible from animals to humans. The infection can be acquired directly from animals, or through the ingestion of contaminated foodstuffs. The severity of these diseases in humans can vary from mild symptoms to life-threatening conditions.

In order to prevent zoonoses from occurring, it is important to identify which animals and foodstuffs are the main sources of infections. For this purpose and to follow the developments on food safety in the European Union, information aimed at protecting human health is collected and analysed from all European Union Member States.

In 2007, 27 Member States submitted information on the occurrence of zoonoses and zoonotic agents to the European Commission and the European Food Safety Authority. Further information on zoonoses cases in humans was acquired from the European Centre for Disease Prevention and Control. In addition, four countries that were not EU Member States provided information on zoonoses for the report. Assisted by its Zoonoses Collaboration Centre, the European Food Safety Authority and the European Centre for Disease Prevention and Control jointly analysed all data, the results of which are published in this annual Community Summary Report, which covers ten diseases.

In 2007, campylobacteriosis was again the most frequently reported zoonotic disease in humans in the European Union with 200,507 reported confirmed cases and most Member States reporting an increased number of cases. Salmonellosis was still the second most commonly recorded zoonosis accounting for 151,995 confirmed human cases. However, the incidence of salmonellosis continues to decrease in the European Union with a statistically significant trend over the last four years.

In foodstuffs, the highest proportion of *Campylobacter* positive samples was once again reported for fresh poultry meat, where on average 26% of samples were found positive. *Campylobacter* was also commonly detected from live poultry, pigs and cattle. The reported proportions of *Campylobacter* positive samples remained at high levels and no overall decrease was apparent.

Salmonella was most often found in fresh poultry and pig meat where proportions of positive samples, on average 5.5% and 1.1%, were detected respectively. Some Member States reported 0.8% of table eggs positive with *Salmonella*, while dairy products, vegetables and fruit were rarely found to contain the bacterium. In animal populations, *Salmonella* was most frequently detected in poultry flocks. 2007 was the first year when Member States implemented the new *Salmonella* control programmes in poultry (Gallus gallus) breeding flocks on a mandatory basis and already 15 Member States reported prevalence below the *Salmonella* reduction target of 1% laid down by Community legislation.

The number of listeriosis cases in humans remained at the same level as in 2006 with 1,554 confirmed cases recorded in 2007. A high fatality rate of 20% was reported among the cases, especially affecting the elderly. *Listeria* bacteria were seldom detected above the legal safety limit from ready-to-eat foods but findings over this limit were most often found in smoked fish and other ready-to-eat fishery products followed by ready-to-eat meat products and cheeses.

At European Union level, the occurrence of bovine brucellosis remained largely unchanged compared to 2006, while that of bovine tuberculosis and sheep/goat brucellosis seemed to slightly decrease. In humans, 542 confirmed brucellosis cases were reported but the notification rate is decreasing.

Three cases of rabies were reported in humans in 2007 and in all of them the infection was acquired outside Europe. Rabies was still found in domestic and wildlife animals in the Baltic and some Eastern European Member States. However, in 2007 three Member States reported a marked decrease in the numbers of animal cases.

A total of 2,905 confirmed VTEC infections were recorded in the European Union in 2007. Among animals and foodstuffs, VTEC was most often reported in cattle and bovine meat. The bacterium was very rarely recovered from vegetables.

In 2007, the number of reported yersiniosis cases in humans was 8,792, and the bacterium was reported from pigs and pig meat. Two parasitic zoonoses, trichinellosis and echinococcosis, caused 779 and 834 human cases each in European Union Member States. In animals, these parasites were mainly detected in wildlife.

Introduction

The framework of reporting

The Community system for the monitoring and collection of information on zoonoses is based on the Zoonoses Directive 2003/99/EC[1], which obligates the European Union (EU) Member States (MSs) to collect relevant and, where applicable, comparable data of zoonoses, zoonotic agents, antimicrobial resistance and food-borne outbreaks. In addition, MSs shall assess trends and sources of these agents as well as outbreaks in their territory, transmitting an annual report to the European Commission, covering the data collected. The European Food Safety Authority (EFSA) is assigned the tasks of examining this data and publishing the Community Summary Report.

The Decision 2119/98/EC[2] on setting up a network for the epidemiological surveillance and control of communicable diseases in the Community, as complemented by Decision 2000/96/EC with amendment 2003/542/EC on the diseases to be progressively covered by the network, established the basis for data collection on human communicable diseases from MSs. The Decisions foresee that data from the networks shall be used in the Community Summary Report.

In this report the data related to the occurrence of zoonotic agents in animals, foodstuffs and feed as well as to antimicrobial resistance in these agents are collected in the framework of Directive 2003/99/EC. This applies also to the information on food-borne outbreaks. The information concerning zoonoses cases in humans and related antimicrobial resistance is derived from the networks under Decision 2119/98/EC.

Since 2005, the European Centre for Disease Prevention and Control (ECDC) has provided the data on zoonotic infections in humans, as well as their analyses, for the Community Summary Report. Data anaylsed from 2007 and 2006 derived from two sources: the new European Surveillance System (TESSy), which has been implemented and is maintained by ECDC, and the Dedicated Surveillance Network of Euro-TB.

This Community Summary Report 2007 was prepared in collaboration with ECDC and assisted by EFSA's Zoonoses Collaboration Centre (ZCC, in the National Food Institute of the Technical University of Denmark). MSs, other reporting countries, the European Commission and Community Reference Laboratories were consulted while preparing the report.

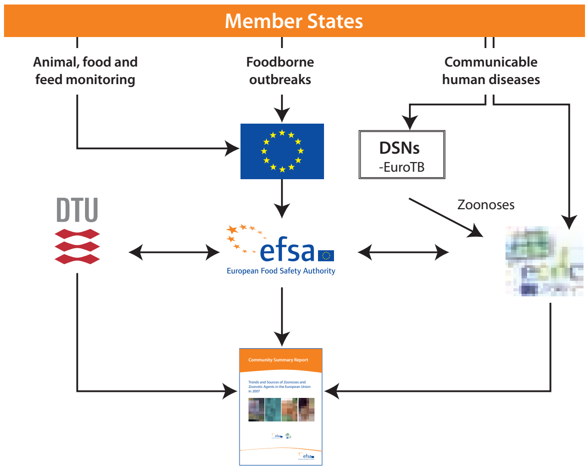
The efforts made by MSs, reporting non-MSs as well as by the Commission in the reporting of zoonoses data and in the preparation of this report are gratefully acknowledged.

The data flow for the 2007 Community Summary Report is shown in Figure IN1.

1 Directive 2003/99/EC of the European Parliament and of the Council of 17 November 2003 on the monitoring of zoonoses and zoonotic agents, amending Council Decision 90/424/EC and repealing Council Directive 92/117/EC (OJ L 325, 12.12.2003 p. 31)

2 Decision 2119/98/EC of the European Parliament and of the Council setting up a network for the epidemiological surveillance and control of communicable diseases in the Community (OJ L 268, 3.10.1998, p.1)

Figure IN1. | ***Scheme of the data flow for the Community Summary Report, 2007***



Note: Human data is collected by ECDC through The European Surveillance System (TESSy)

Data received for 2007

In 2007, data were collected on a mandatory basis for the following eight zoonotic agents: *Salmonella*, thermophilic *Campylobacter*, *Listeria monocytogenes*, verotoxigenic *E. coli*, *Mycobacterium bovis*, *Brucella*, *Trichinella* and *Echinococcus*. Moreover, mandatory reported data included antimicrobial resistance in *Salmonella* and *Campylobacter* isolates, food-borne outbreaks and susceptible animal populations. Additionally, based on the epidemiological situations in MSs, data were reported on the following agents and zoonoses: *Yersinia*, rabies, *Toxoplasma*, *Cysticerci*, *Sarcocystis*, Q fever, psittacosis and *Leptospira*. Data on antimicrobial resistance in indicator *E. coli* and *Enterococci* isolates were also submitted. Furthermore, MSs provided data on certain other microbiological contaminants in foodstuffs: histamine, staphylococcal enterotoxins and *Enterobacter sakazakii* (*Cronobacter* spp.), for which food safety criteria are set down in the Community legislation.

All 27 MSs submitted national zoonoses reports concerning the year 2007. In addition, zoonoses reports were submitted by two non-MSs (Norway and Switzerland). For Bulgaria and Romania, this was the first year as reporting MSs. Data on zoonoses cases in humans were also received from all 27 MSs and additionally from four non-MSs: Iceland, Liechtenstein, Switzerland and Norway. The deadline for data submission was 31 May 2008.

The draft Community Summary Report was sent to MSs for consultation on 10 October 2008 and comments were collected by 7 November 2008. The utmost effort was made to incorporate comments and data amendments within the available time frame. The final report was published online by EFSA and ECDC on 20 January 2009.

The structure of the report

The information from 2007 is published in two Community Summary Reports. The current first report covers reported information on zoonoses and zoonotic agents and the second report includes information on food-borne outbreaks. Data on antimicrobial resistance from the year 2007 will be published in a separate report covering all data on antimicrobial resistance in zoonotic agents reported by MSs during the period from 2004 to 2007 together with resistance data from the EU-wide baseline surveys on *Salmonella* in turkeys and slaughter pigs.

The current report is divided into three levels. Level 1 consists of the executive summary, an introduction to reporting, general conclusions and zoonoses or item specific summaries. Level 2 of the report presents a Community assessment of the specific zoonoses and zoonotic agents and a description of materials and methods, as well as an overview of notification and monitoring programmes implemented in the Community (Appendix 2). Level 1 and 2 of the report are available in print and are disseminated to all European Community stakeholders. Level 3 of the report consists of an overview of all data submitted by MSs in table format and is only available online and in the CD ROM inserted in the published report.

Due to the increased quantity of data received annually and the number of reporting countries, it has become difficult to analyse all the data within the prescribed timelines and include analyses in a single annual report. There is also a need to have a more in-depth analysis on some aspects (e.g. trends), which will take more time and space in the report. Therefore, it has been agreed to present the reported information in the following way in this 2007 report:

The most common zoonoses and zoonotic agents (*Salmonella*, *Campylobacter*, *Listeria monocytogenes*, tuberculosis due to *M. bovis*, *Brucella* and rabies) are included in the report with in-depth analyses. Typically, these are the ones where a substantial amount of data is available each year and where there is the need to follow trends to verify the progress made in control/eradication programmes/ measures.

For other zoonoses (VTEC, *Yersinia*, *Trichinella*, and *Echinococcus*) where less data are available and where no major annual developments in the Community are expected to take place in the short term a lighter overview of the situation in the EU is presented. However, these zoonoses will be thoroughly analysed every second or third year in the Community Summary Report where data covering several reporting years will be used.

As regards zoonoses and other agents where annual data is often scarce and reported by few MSs, data will only be reported every third year. This includes *Toxoplasma*, Q fever, *Enterobacter sakazakii*, histamine, staphylococcal enterotoxins and data on animal populations.

Monitoring and surveillance schemes for most zoonotic agents covered in this report are not harmonised between MSs, and findings presented in this report must, therefore, be interpreted with care. The data presented may not necessarily derive from sampling plans that are statistically designed, and may not accurately represent the national situation regarding zoonoses. Results are generally not directly comparable between MSs and sometimes not even between different years in one country.

Data presented in this report were chosen such that trends could be identified whenever possible. As a general rule, and as described, for food, feed and animal samples, a minimum number of 25 tested samples were required for the data to be selected for analysis. Furthermore, as a general rule, data from at least five MSs should be available to warrant presentation, leading to a table or a figure. However, for some zoonoses or zoonotic agents fewer data have been accepted for analysis. Historical data and trends are presented, whenever possible.

The national zoonoses reports submitted in accordance with Directive 2003/99/EC are published on the EFSA website together with the Community Summary Report.

Summary

2.1. | Main conclusions on the Community Summary Report on Zoonoses 2007

- The decreasing trend in the notification rate of salmonellosis cases in humans continued in 2007 while salmonellosis still remained the second most commonly reported zoonotic disease in the EU. The view that the major sources of human *Salmonella* infections are eggs and meat from pigs and poultry was supported by the data reported in 2007. *Salmonella* was rarely detected from other foodstuffs, such as dairy products and fruit and vegetables. Products in non-compliance with the Community *Salmonella* criteria were mainly observed in minced meat and meat preparations.

- 2007 was the first year when MSs implemented the new *Salmonella* control programmes in breeding flocks of fowl (*Gallus gallus*) on a mandatory basis in accordance with Community legislation. Already 15 MSs reported prevalence below the *Salmonella* reduction target laid down for breeding flocks. No major changes in *Salmonella* prevalence in laying hens, broiler or pig populations were apparent at Community level.

- Campylobacteriosis remained by far the most frequently reported zoonotic disease in humans. In 2007, 19 MSs reported an increase in the number of cases. The occurrence of *Campylobacter* was high in broiler meat and broiler flocks throughout the production chain in many MSs underpinning the view that broiler and other poultry meat are important sources of these infections.

- The number of listeriosis cases in humans was at the same level in 2007 as in the previous year. A high case fatality rate of 20% was recorded among those cases where information was available, those especially affected were the elderly. A substantial number of investigations of *L. monocytogenes* in foods were reported by MSs. The results revealed that the proportion of samples exceeding the legal safety limit (100 cfu/g) was very low in ready-to-eat foods, and were most often reported in smoked fish.

- The prevalence of bovine brucellosis remained largely unchanged within Community cattle herds compared to 2006, whereas the prevalence of brucellosis in sheep and goats seemed to be decreasing. Notification of brucellosis cases in humans decreased as well. Herds infected with brucellosis appear to be important sources of human infections in MSs that are not free of animal brucellosis.

- There was a significant decreasing trend in the prevalence of bovine tuberculosis in the Community co-financed non-free MSs. In all but one of the non-free MSs that did not receive co-financing, the prevalence either decreased or stayed at the previous level. Reported human cases of tuberculosis due to *M. bovis* remained at previous levels in the Community. The findings of *M. bovis* in other domestic animals, wildlife and zoo animals indicate that some of these animal species can serve as a reservoir of bovine tuberculosis.

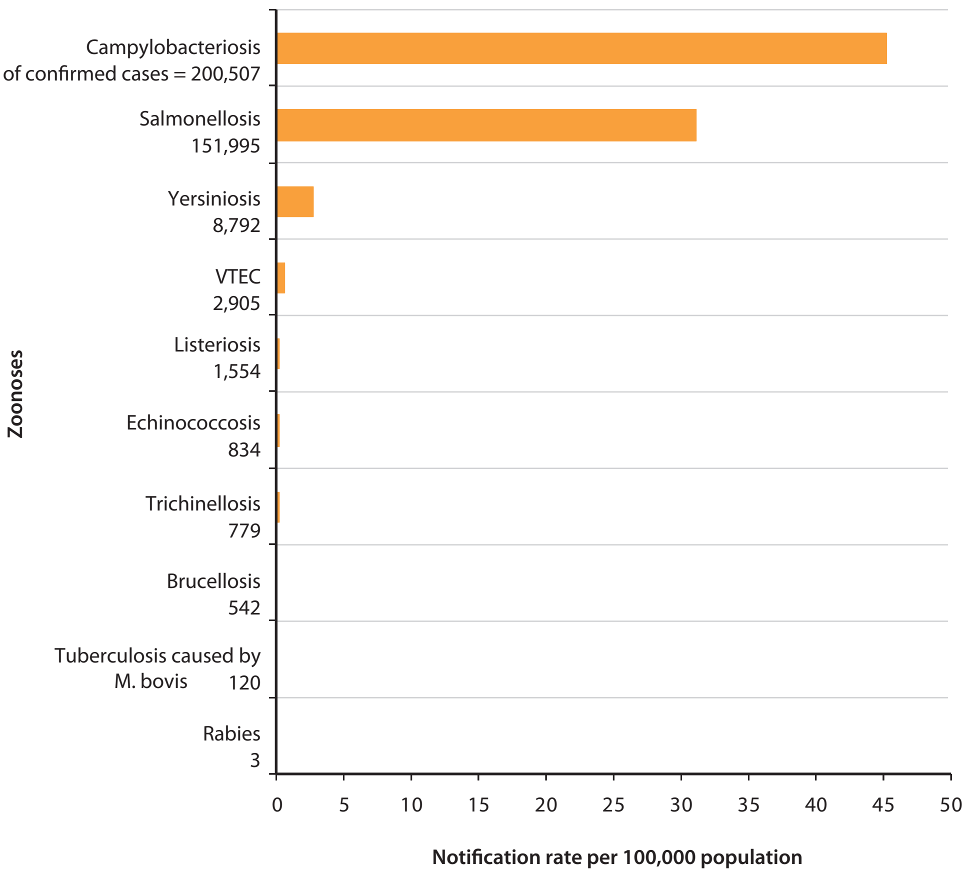
- Notification rates of verotoxigenic *E. coli* (VTEC) infections in humans varied between MSs. Notification rate was highest in young children and this group also accounted for almost 60% of the 103 haemolytic uremic syndrome (HUS) cases reported, mainly associated with serogroup VTEC O157. In animals, VTEC bacteria are mostly reported from cattle and bovine meat.

- Three cases of rabies in humans were reported in 2007 and in all these cases, the infection was acquired outside Europe. Rabies was still found in domestic animals and wildlife in the Baltic and some MSs in the eastern part of Europe. Some of these MSs reported a marked decrease in animal cases as a result of vaccination programmes. Illegally imported pets are another relevant risk related to rabies.

2.2. | Zoonoses and item specific summaries

The importance of a zoonosis as a human infection is not dependant on incidence in the population alone. The severity of the disease and case fatality are also important factors affecting the relevance of the disease. For instance, despite the relatively low number of cases caused by VTEC, *Listeria*, *Echinococcus*, *Trichinella* and *Lyssavirus* (rabies), compared to the number of human campylobacteriosis and salmonellosis cases, these infections are considered important due to the severity of the illness and higher case fatality rate.

Figure SU1. | ***The reported notification zoonoses rates in confirmed human cases in the EU, 2007***



Salmonella

Humans

In 2007, a total of 151,995 confirmed cases of human salmonellosis (TESSy) were reported in the EU. The EU notification rate was 31.1 cases per population of 100,000, ranging from 2.9 to 171.6 confirmed cases per population of 100,000. Germany accounted for 36.4% of all reported cases, whereas the notification rate was highest in the Czech Republic. In 2007, there was a 7.3% decrease in the notification rate from 2006 (with the new MSs included for 2006 to facilitate the comparison), and this was part of a significant, decreasing trend over the past four years. As in previous years, S. Enteritidis and S. Typhimurium were the most frequently reported serovars (81% of all known serovars in human cases).

The highest notification rate for human cases was for age groups 0 to 4 years and 5 to 14 years. A seasonal peak in the number of cases during the late summer and autumn was generally observed in all MSs and S. Enteritidis demonstrates a much more prominent peak than the other serovars. In 2007, the proportion of cases reported as imported remained at the same level, 7.9%, as in 2006, although for some countries imported cases represent the majority of all salmonellosis cases. Data on the origin of cases (domestic/imported) were provided by 26 MSs and three non-MSs.

Foodstuffs

A wide range of foodstuffs was tested for *Salmonella* by MSs, but the majority of samples was from various types of meat and products thereof. As in previous years, MSs reported *Salmonella* findings most frequently from investigations of poultry meat, followed by those of pig meat. The highest proportions of positive samples were also observed in investigations of these food categories.

Most MSs reported data on *Salmonella* in broiler meats and the overall proportion of positive samples in fresh broiler meat was 5.5% at EU level varying between 0% and 55.6% in MSs. The bacterium was also observed on average in 6.8% of non-ready-to-eat (non-RTE) products of broiler meat and in 0.2% of RTE products at EU level. *Salmonella* contamination in non-RTE turkey meats was at the same level as in broiler meat, being 6.8% (0% to 14.3%) in 2007.

In 2007, 1.1% of fresh pig meat samples were on average found *Salmonella* positive in the EU, ranging from 0% to 19.4% in reporting MSs. However, this data is strongly influenced by the high numbers of samples reported by the Nordic MSs that have low prevalence. In the EU-wide baseline survey in slaughter pigs carried out in 2006 to 2007, the EU weighted mean *Salmonella* prevalence on pig carcasses was 8.3% ranging from 0% to 20.0% in MSs. In bovine meat, most MSs reported very low (<1.0%) proportions of positive samples, even though two MSs reported higher frequencies (up to 6.7%).

For those MSs reporting data on table eggs, no major changes were observed in the proportion of *Salmonella* positive samples compared to previous years. Overall, 0.8% (range 0% to 5.8%) of tested egg units were found positive, which is the same level as in 2006 (0.8%).

Substantial numbers of dairy products, including cheeses, were tested by MSs in 2007, and *Salmonella* was very rarely found in these products. Many MSs also carried out investigations in different types of fruit and vegetables in 2007, prompted by recently reported outbreaks linked to these products. However, *Salmonella* was only seldom detected in these investigations (on average 0.3% at EU level), and the highest occurrence tended to be reported in sprouted seeds (up to 2.2% positive). However, one MS reported 2.3% positive samples in pre-cut RTE fruit and vegetables. Also, fish, fishery products and live bivalve molluscs were reported occasionally to contain *Salmonella* by MSs, but all with positive proportions below 2.1%.

Samples that did not comply with the Community *Salmonella* criteria were observed from products of meat origin, and especially from those made of poultry meat. However, in general, the level of samples in non-compliance with the *Salmonella* criteria in 2007 was comparable to the findings in 2006.

Animals

Salmonella findings were reported by MSs in various animal species, including farm, pet and zoo animals and wildlife.

2007 was the first year when the new *Salmonella* control programmes in breeding flocks of *Gallus gallus* were implemented on a mandatory basis in accordance with the Regulation (EC) No 2160/2003, and MSs reported data from these programmes. The aim of the programmes is to meet the *Salmonella* reduction target set down by the Regulation (EC) No 1003/2005. The target states that the occurrence of *S.* Enteritidis, *S.* Hadar, *S.* Infantis, *S.* Typhimurium and *S.* Virchow should be reduced to 1% or less in adult breeding flocks comprising at least 250 birds by 31 December 2009. The data showed that already 15 MSs reported in 2007 a prevalence of these five target serovars that was lower than the target, whereas eight MSs reported prevalence of the five serovars ranging from 1.1% to 15.4%. Due to the more sensitive testing scheme of the control programmes for breeding flocks in 2007, the results were not fully comparable with data from previous years. However, the observations indicate that the improved status of *Salmonella* in parent-breeding flocks of *Gallus gallus* observed from 2005 to 2006 continued in 2007.

A total of 4.3% (ranging between 0% and 27.1%) of the tested laying hen flocks were found infected during 2007 in reporting MSs, an overall occurrence slightly higher than in the two previous years, although the figures are not fully comparable. For broilers, the observed proportion of *Salmonella* positive flocks in 2007 remained approximately at the same level as in 2006 (3.7% vs. 3.4%) in MSs with control or monitoring programmes. The reported prevalence in broiler flocks varied between 0% and 25.3%. No overall trends in the occurrence of *Salmonella* in the group of reporting MSs for the years 2004 to 2007 were evident for laying hen flocks, but there seems to be a slightly decreasing, but not statistically significant, trend for broiler flocks among reporting MSs. Of the tested turkey flocks, 7.8% (0.1% to 14.8%) were *Salmonella* positive in routine monitoring and for ducks and geese, 10.6% and 9.3% of the flocks were reported infected, respectively.
An EU-wide *Salmonella* baseline survey was conducted in breeding and production flocks of turkeys in 2006 to 2007. The EU weighted mean prevalence of *Salmonella* in breeding flocks was 13.6% and in production turkey flocks it was 30.7%. Prevalence was in most cases substantially higher in the baseline survey compared to routine monitoring results in MSs providing both types of data.

Only few MSs reported data from routine monitoring on the prevalence of *Salmonella* in pig herds or slaughter pigs in 2007. However, an EU-wide *Salmonella* baseline survey was carried out in slaughter pigs in 2006 to 2007. In total, 19,071 ileo-caecal lymph node samples were collected from slaughtered pigs and the EU weighted mean prevalence in pigs was 10.3% ranging between 0% and 29.0% in MSs. Few MSs have active monitoring of *Salmonella* in cattle, but two MSs both reported slaughter prevalence of 0.1% in cattle.

Campylobacter

Humans

In total, 200,507 confirmed cases of campylobacteriosis were reported by 24 MSs, which was a 14.2% increase compared to 2006 (with the new MSs included for 2006 to make the comparison). Most MSs reported more cases in 2007 than in previous years although Germany accounted for 56% of the increase. Children under the age of five had the highest notification rate (120 cases per population of 100,000). Other age groups varied between circa 32 to 53 cases per population of 100,000.

Foodstuffs

Broiler meat was the most frequently sampled food category in 2007 and the reported occurrence of *Campylobacter* was generally at the same high level as in previous years. On average, 26.0% of fresh broiler meat samples tested *Campylobacter* positive at EU level and findings ranged from 0% to 86.5% in reporting MSs. No overall trend was observed in the proportion of the positive broiler meat samples in reporting MSs during the years 2004 to 2007. In other poultry meat, similar contamination levels to broiler meat were reported. In samples of pig meat and bovine meat, *Campylobacter* was detected less frequently: 0.9% and 1.2% of the samples, respectively. This is in line with results from previous years. Poultry meat appears still to be the most important food-borne source of *Campylobacter* as the occurrence of the bacteria remained at high levels throughout the food chain, from live animals to meat retail level. In other foodstuffs *Campylobacter* was detected only occasionally.

Animals

In 2007, as in previous years, the majority of data on *Campylobacter* in animals was from investigations of broilers, but data from pigs and cattle was also reported. The recorded prevalence of *Campylobacter* positive broiler flocks was generally high: 25.2% at EU level ranging from 0% to 82.8% in MSs. However, lower prevalence in broiler flocks was reported by some Nordic and Baltic countries. High prevalence was also observed from the monitoring of pigs, 56.1% at EU level (ranging from 0.9% to 78.5%). In cattle, reported occurrences were somewhat lower, 5.9% on average in the EU, but prevalence up to 70.5% was reported by some MSs. However, *Campylobacter* contamination rates in pig and bovine meat typically decrease sharply following slaughter and remain low at retail. This was also demonstrated by the results reported in 2007.

Listeria

Humans

A total of 1,554 confirmed cases of listeriosis were reported from 26 MSs in 2007. The EU notification rate was 0.3 per population of 100,000. The highest notification rates were observed in Denmark, Finland, Sweden and Luxembourg. The number of confirmed cases of listeriosis almost reached the same level as in 2006. Listeriosis mainly occurred among elderly people, with 53.1% of cases (notification rate was 1.0 per population of 100,000) occurring in individuals over the age of 65. The notification rate among children under the age of five was 0.5 cases per population of 100,000. The case fatality rate for human listeriosis was 20% for the cases where this information was available, mainly occurring in the elderly.

Foodstuffs

In 2007, a large number of investigations concerning ready-to-eat (RTE) foodstuffs were reported by MSs. The food categories most often covered were RTE meat products, dairy products, cheeses and fishery products. In general, *L. monocytogenes* was rarely detected in quantities exceeding the legal safety limit of 100 cfu/g. At EU level the proportions exceeding this limit varied between 0% and 2.2% in the different RTE food categories. The proportion of the samples in non-compliance with the criterion was most often observed at retail in fishery products (1.7% and 2.2% for single products and batches, respectively), particularly in smoked fish, followed by meat products (0.3% and 0.7%) and various types of cheeses (0.1% to 0.3%).

Animals

In 2007, 18 MSs reported data on *L. monocytogenes* in animals and the bacterium was reported from various animal species. In some MSs the detected proportion of positive samples reached a moderate level in cattle and in small ruminants.

VTEC

Humans

In 2007, a total of 2,905 confirmed human VTEC cases were reported from 23 MSs. This is a slight decrease compared to 2006. The EU notification rate was 0.6 per population of 100,000. The most commonly identified VTEC serogroup was O157 (54%). The notification rate was highest in 0 to 4 year old children and this group also accounted for almost 60% of the 103 HUS cases reported, mainly associated with VTEC O157 infections.

Foodstuffs and animals

The reported occurrence of VTEC bacteria in food was generally low, and has been relatively constant during the 2005 to 2007 period. In fresh bovine meat the proportion of samples positive for VTEC was 0.3% at EU level and 0.1% for the serogroup VTEC O157. Some MSs also reported, from bovine meat, the O26, O103, O111, and O113 serogroups that are all frequently isolated from human VTEC cases. Several MSs tested vegetables for VTEC and no samples were found positive.

In bovine animals the average VTEC prevalence in reporting MSs was 3.6% and the proportion of VTEC O157 positive animals was 2.9%. The reported occurrence of VTEC ranged from 0% to 22.1% in MS investigations.

Tuberculosis due to *Mycobacterium bovis*

Humans

No information on *Mycobacterium bovis* cases in 2007 was available, so the 2006 data were included. As in previous years, human infections have been rare in the EU. The total number of human cases reported in 2006 reached 120 confirmed cases in the EU, and was similar to that reported in 2005. The highest proportions of reported and confirmed cases occurred in Germany and the United Kingdom (67.5%), with the greatest disease burden and risk among those aged 65 or above.

Animals

Eleven MSs, two non-MSs as well as 15 provinces and three regions in Italy were officially bovine tuberculosis free (OTF) in 2007. As in 2006, only Belgium, France and Germany out of the OTF MSs, reported few positive cattle herds in 2007. Overall, a decrease in the proportion of cattle herds infected/positive with *M. bovis* was observed in the non-OTF MSs compared to 2006: 0.44% vs. 0.66%, respectively. However, this decrease was due to the inclusion of data from Romania that has a low occurrence of bovine tuberculosis in its large cattle herd population. When excluding the Romanian data, the proportion of cattle herds infected/positive at EU level remained the same as in the previous year. Of the 15 reporting non-OTF MSs, Ireland and the United Kingdom reported the highest prevalence (4.4% and 3.3%, respectively) in their national herds. The remaining non-OTF MSs reported low to very low prevalence (0% to 1.2%) of positive cattle herds. Compared to 2006, the prevalence either decreased or remained at a comparable level in most non-OTF MSs, and there was a statistically significant decreasing trend in prevalence during the years 2004 to 2007 in the group of four co-financed non-OTF MSs providing the data. Only in Ireland did the proportion of existing positive herds increase. Findings of *M. bovis* in other domestic animals, wildlife and zoo animals were reported by several MSs indicating that some of these animal species can serve as a reservoir of bovine tuberculosis.

Brucella

Humans

In 2007, a total of 542 confirmed human brucellosis cases were reported in the EU. The EU notification rate was 0.1 cases per population of 100,000. The highest notification rates were reported by Greece, Portugal and Spain, which are MSs not officially free of bovine and/or ovine and caprine brucellosis. In the EU, the highest notification rate of brucellosis was noted for people in the 25 to 44 age group. A peak in reported cases was observed in summer. Scant data available on mode of transmission confirms that contact with farm animals as well as consumption of cheese was the main vehicle for infection.

Foodstuffs

Data on the occurrence of *Brucella* in milk and cheese were provided by two MSs, and positive findings were reported in raw cow's milk (0.3% to 19.6%) and raw sheep's milk (3.5% to 8.9%).

Animals

In 2007, 12 MSs were officially free of brucellosis in cattle (OBF) and 16 MSs were officially free of brucellosis in sheep and goats (ObmF). Furthermore, 20 provinces and seven regions in Italy as well as four Azores islands in Portugal and Great Britain in the United Kingdom were OBF, whereas 64 departments in France, five provinces and eight regions in Italy, all the Azores islands in Portugal and two islands in the Canaries in Spain were ObmF.

At EU level, a marked decrease was observed in the proportion of existing cattle herds positive for, or infected with bovine brucellosis from 2006 to 2007. However, this decrease is only caused by the inclusion of data from Romania (MS since 2007) which has a large cattle population with no positive herds. In the Community co-financed non-OBF MSs, the prevalence of bovine brucellosis increased compared to 2006. This was specifically observed for Ireland, Italy and the United Kingdom (Northern Ireland). No significant trend was detected for bovine brucellosis positive tested cattle herds during the years 2004 to 2007 in co-financed non-OBF MSs.

In the case of small ruminant brucellosis, the proportion of existing herds either positive or infected at EU level has decreased from 2004 to 2007 even though the trend is not statistically significant. In the Community co-financed non-ObmF MSs, both epidemiological indicators estimating prevalence decreased compared to 2006. Italy was an exception, since the proportion of existing positive herds was reported to increase as a result of new regions becoming officially free of the disease.

Data reported in 2007 indicate that the prevalence of ovine/caprine brucellosis is decreasing in the EU, while for bovine brucellosis no clear trend was evident.

Rabies

Humans

In 2007, three human rabies cases were reported in the EU. All three cases became infected outside Europe.

Animals

Eight MSs reported the classical rabies virus in various animal species in 2007 and only two MSs reported illegally imported cases. The majority of rabies cases in domestic and wild animals was reported by the Baltic and some Eastern European MSs, where foxes and raccoon dogs account for more than 75% of positive samples. A significant decrease was observed in the total number of positive animal cases infected with the classical rabies virus but this was mainly due to two MSs that had reported substantial numbers of cases in previous years but did not provide any data in 2007. However, Estonia, Latvia and Poland reported a reduction in their numbers of positive animal samples compared to previous years, especially in foxes and raccoon dogs as a result of successful vaccination programmes.

Six MSs reported findings of European bat *Lyssavirus* in bats and one MS reported European bat *Lyssavirus* in cat, indicating the transfer of the virus between animal species.

Yersinia

In 2007, 8,792 confirmed human cases of yersiniosis were reported in the EU. Findings of *Y. enterocolitica* were reported on average in 2.0% of pig meat samples and from 0% to 52% of pigs.

Echinococcus and *Trichinella*

In 2007, MSs reported 834 confirmed human cases of echinococcosis, the majority of which (724) were due to infections with *E. granulosus*. As for trichinellosis, a total of 779 confirmed human cases were reported. Findings of both parasites were reported in farm animals and wildlife in the EU.

Salmonella | 3.1.

Salmonella has long been recognised as an important zoonotic pathogen of economic significance in animals and humans. The genus *Salmonella* is currently divided into two species: *S. enterica* and *S. bongori*. *S. enterica* is further divided into six sub-species and most *Salmonella* belong to the subspecies *S. enterica* subsp. *enterica*. Members of this subspecies have usually been named based on where the serovar or serotype was first isolated. In the following text, the organisms are identified by genus followed by serovar, e.g. *S.* Typhimurium. More than 2,500 serovars of zoonotic *Salmonella* exist and the prevalence of the different serovars changes over time.

Human salmonellosis is usually characterised by the acute onset of fever, abdominal pain, nausea, and sometimes vomiting. Symptoms are often mild and most infections are self-limiting, lasting a few days. However, in some patients, the infection may be more serious and the associated dehydration can be life threatening. In these cases, as well as when *Salmonella* causes bloodstream infection, effective antimicrobials are essential for treatment. Salmonellosis has also been associated with long-term and sometimes chronic sequelae e.g. reactive arthritis.

The common reservoir of *Salmonella* is the intestinal tract of a wide range of domestic and wild animals which result in a variety of foodstuffs covering both food of animal and plant origin as sources of infections. Transmission often occurs when organisms are introduced in food preparation areas and are allowed to multiply in food, e.g. due to inadequate storage temperatures, inadequate cooking or cross contamination of ready-to-eat food. The organism may also be transmitted through direct contact with infected animals or humans or faecally contaminated environments.

Overall, in the EU, *S.* Enteritidis and *S.* Typhimurium are the serovars most frequently associated with human illness. Human *S.* Enteritidis cases are most commonly associated with the consumption of contaminated eggs and poultry meat, while *S.* Typhimurium cases are mostly associated with the consumption of contaminated pig, poultry and bovine meat.

In animals, sub-clinical infections are common. The organism may easily spread between animals in a herd or flock without detection and animals may become intermittent or persistent carriers. Infected cows may succumb to fever, diarrhoea and abortion. Within calf herds, *Salmonella* may cause outbreaks of diarrhoea with high mortality. Fever and diarrhoea are less common in pigs than in cattle and sheep; goats and poultry usually show no signs of infection.

Table SA1 presents the countries reporting data for 2007.

Table SA1. | ***Overview of countries reporting data for* Salmonella*, 2007***

Data	Total number of MS reporting	Countries
Human	27	**All MSs** **Non-MSs:** CH, IS, LI, NO
Food	23	**All MSs** except BG, CY, FR, MT **Non-MSs:** NO, CH
Animals	24	**All MSs** except CY, LT, MT **Non-MSs:** NO, CH
Sero- and phage types	22	**All MSs** except BG, CY, FR, LT , MT **Non-MSs:** NO, CH

Note: In the food or animal chapters, only countries reporting 25 samples or more have been included for analyses

3.1.1. | Salmonellosis in humans

In 2007, a total of 155,540 confirmed cases of human salmonellosis were reported via TESSy (The European Surveillance System) from 30 countries, including 27 EU MSs and three non-MSs, and directly to EFSA from one country (Switzerland) (Table SA2). The number of confirmed human salmonellosis cases in the EU reported, first via BSN (Basic Surveillance Network) and from 2006 via TESSy, has decreased since 2005: from 173,879 (or 38.2 / 100,000) confirmed cases in 2005 to 164,011 (or 35.8 / 100,000) in 2006, and to 151,995 (or 31.1 / 100,000) in 2007. This represents a 7.3% decrease from 2006, despite contributions from countries that became EU members in 2007 (Bulgaria and Romania), and a 12.6% decrease from 2005 in EU MSs. Overall, total case counts of salmonellosis have decreased since 2004. The decreasing Community trend since 2004 is statistically significant (Figure SA2a).

Despite Germany reporting 2,825 more confirmed salmonellosis cases than in 2006, the total number of confirmed cases within the EU decreased between 2007 and 2006, largely due to the Czech Republic reporting 6,531 fewer cases and Hungary reporting 2,814 fewer cases compared to 2006, respectively. Of the 27 MSs, 15 (60.0%) reported a decrease in *Salmonella* notification rates in 2007, while eight (32.0%) experienced an increase in notification rates compared to the previous year. Germany accounted for the largest proportion of all reported cases in 2007 (36.4%), as in previous years (Table SA2).

Figure SA1 illustrates the geographical distribution of reported notification rates in the EU. The different sensitivities of MS reporting systems may have influenced these figures; consequently, comparison between countries should be done with caution. Comparison between years within a country is, in general, more valid. Also, the differences between countries in proportion of imported versus domestically aquired cases should be noted, see Table SA3.

Within each reporting MS, statistically significant and decreasing trends (2004-2007) were observed in Austria, Poland and Spain (Figure SA2b).

Figure SA1. | ***Salmonellosis notification rates in humans in the EU, 2007 (per population of 100,000)***

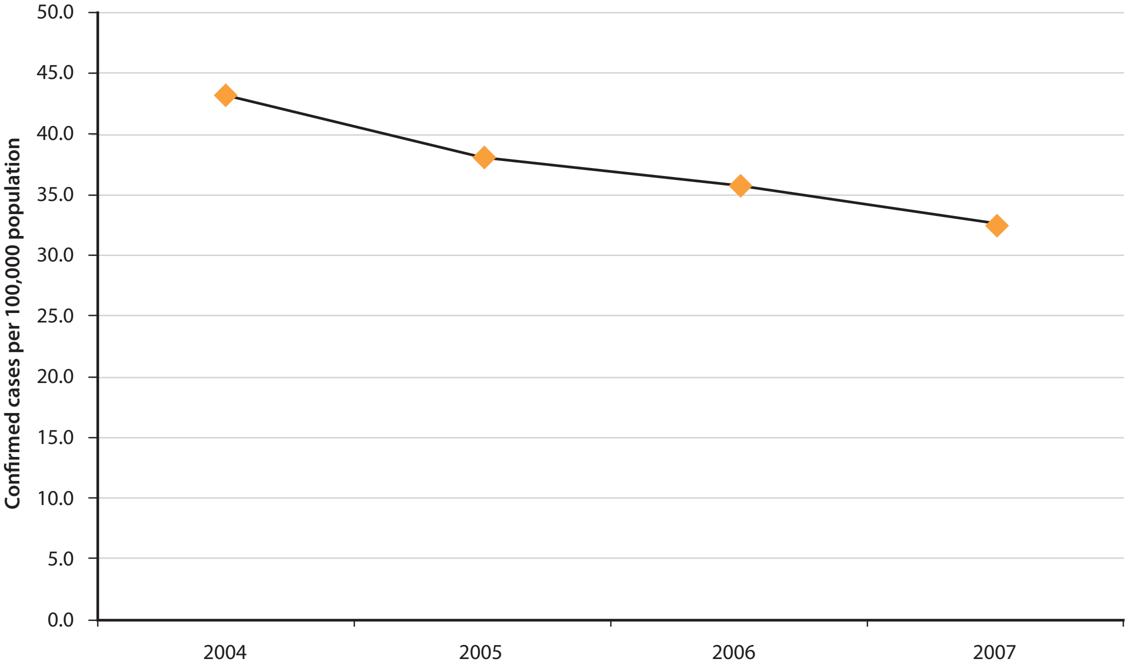
Note: A graduate colour ramp with class interval of 0.1 was used for the map symbology

Table SA2. | ***Reported salmonellosis cases in humans 2003-2007[1], and notification rate in 2007***

Country	2007				2006	2005	2004	2003
	Report Type [2]	Cases	Confirmed cases	Cases/ 100,000	Confirmed cases		Cases	
Austria	C	3,375	3,375	40.7	4,787	5,164	7,286	8,251
Belgium	C	3,973	3,973	37.5	3,693	4,916	9,545	12,894
Bulgaria[3]	A	1,136	1,136	14.8				
Cyprus	C	163	158	20.3	99	59	89	73
Czech Republic	C	17,910	17,655	171.6	24,186	32,860	30,724	
Denmark	C	1,662	1,662	30.5	1,662	1,798	1,538	1,713
Estonia	C	430	430	32.0	453	312	135	184
Finland	C	2,737	2,737	51.9	2,574	2,478	2,248	2,290
France	C	5,510	5,510	8.7	6,008	5,877	6,352	6,199
Germany	C	55,400	55,400	67.3	52,575	52,245	59,947	63,044
Greece	C	741	703	6.3	825	545	1,493	837
Hungary	C	6,892	6,575	65.3	9,389	7,820	7,557	
Ireland	C	456	440	10.2	420	348	416	449
Italy	C	4,499	4,499	7.6	5,164	5,004	6,696	6,352
Latvia	C	619	619	27.1	781	639	503	804
Lithuania	A	2,307	2,270	67.1	3,479	2,348	1,854	1,161
Luxembourg	C	163	163	34.2	308	211	-	421
Malta	C	85	85	20.8	63	66	79	
Netherlands[4]	C	1,245	1,245	11.9	1,667	1,388	1,520	2,142
Poland	A	11,695	11,155	29.3	12,502	15,048	15,958	16,617
Portugal	C	504	482	4.5	387	468	691	720
Romania[3]	A	620	620	2.9				
Slovakia	C	9,241	8,367	155.1	8,242	10,766	12,667	14,153
Slovenia	C	1,346	1,346	67.0	1,519	1,519	3,247	3,980
Spain	C	3,658	3,658	8.2	5,117	6,048	7,109	8,558
Sweden	C	3,930	3,930	43.1	4,056	3,168	3,562	3,794
United Kingdom	C	13,802	13,802	22.7	14,055	12,784	14,809	18,069
EU Total		**154,099**	**151,995**	**31.1**	**164,011**	**173,879**	**196,025**	**172,705**
Iceland	C	93	93	30.2	116	86		
Liechtenstein	C	11	1	2.8	14			
Norway	C	1,649	1,649	35.2	1,813	1,482	1,567	1,539
Switzerland	C	1,802	1,802	23.7	1,786	1,877	1,910	2,233

1. Number of confirmed cases for 2005-2007 and number of total cases for 2003-2004
2. A: aggregated data report; C: case-based report; –-: No report; 0:0 cases reported
3. EU membership began in 2007
4. Sentinel system; notification rates calculated on estimated coverage, 64%

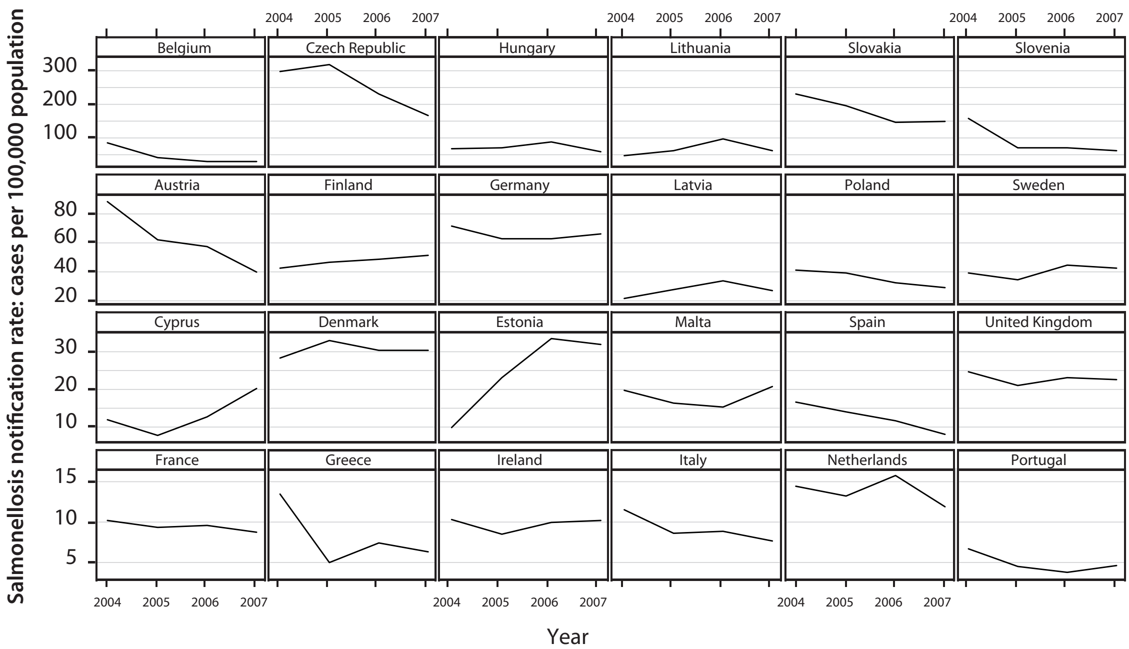
Figure SA2a. | ***Notification rates of reported confirmed cases of human salmonellosis in the EU, 2004-2007[1]***



Source for EU trend: Austria, Belgium, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Malta, the Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, the United Kingdom

1. Includes total cases for 2004 and confirmed cases from 2005-2007

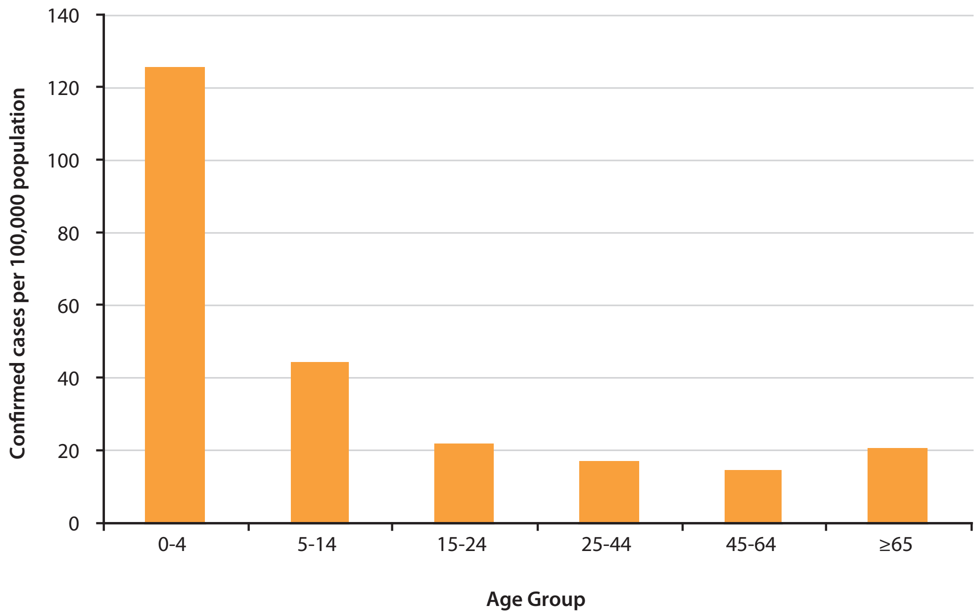
Figure SA2b. | ***Salmonellosis notification rates in humans (cases per 100,000 population) in MSs, 2004-2007***



Note: MSs have been ranked according to the maximum value of the notification rate. A unique scale is used for MSs shown in the same row but scales differ among rows.

The age distribution of *Salmonella* cases in 2007 closely parallels that seen in 2006. Out of 151,995 reported confirmed cases, age data were available for 86.3% of cases. The highest notification rate was for 0 to 4 year olds (125.4 / 100,000) which is almost three times higher than that of the next highest notification rate age group (5 to 14 year olds) and almost six to nine times higher than for those aged 15 and over (Figure SA3).

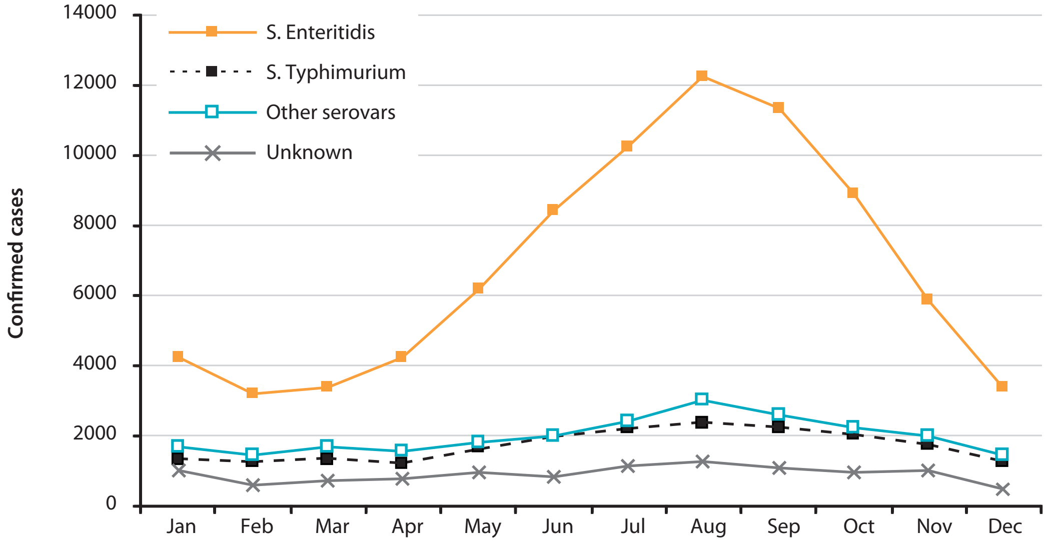
Figure SA3. | ***Age-specific distribution of reported confirmed cases of human salmonellosis, TESSy data for reporting MSs, 2007***



Source: All MSs (N =131,229)

A peak in the number of reported *Salmonella* cases occurs in the summer and autumn, with a rapid decline in winter months (Figure SA4). This pattern supports the influence of temperature and behaviour (i.e. food consumption habits such as barbequed food) on *Salmonella* notification rates. This seasonal variability has been observed in earlier reports, yet when further analysing specific serovar case counts per month, *S.* Enteritidis demonstrates a much more prominent summer/autumn peak than other serovars.

Figure SA4. | ***Number of reported confirmed salmonellosis cases in humans by month and serovar, TESSy data for reporting MSs, 2007***



Source: Belgium, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Italy, Luxembourg, Latvia, Malta, the Netherlands, Portugal, Slovakia, Slovenia, Spain, Sweden and the United Kingdom (N=137,584).

The proportion of *Salmonella* cases that were reported as domestically acquired in MSs remained approximately the same in 2007 as in 2006 (65.1% versus 63.5%) (Table SA3). The same observation was made for the proportion of imported cases or those acquired while travelling abroad which in 2007 was 7.9% compared to 8.0% in 2006. The Nordic countries: Finland, Sweden, Norway and Iceland, reported the highest proportion of imported cases of *Salmonella* ranging from 66.7% to 83.0%. The number of cases with an unknown location of origin still represented 27.0% of cases (Table SA3). However, it should be noted that data on domestic/imported cases are often incomplete and may not provide a true picture of the distribution between domestic and imported cases.

Table SA3. | ***Distribution of confirmed salmonellosis cases in humans by reporting countries and origin of case (domestic/imported), 2007[1]***

Country	Domestic (%)	Imported (%)	Unknown (%)	Total (n)
Austria	86.2	13.8	0	3,375
Belgium	0	0	100.0	3,973
Bulgaria	0	0	100.0	1,136
Cyprus	81.0	3.8	15.2	158
Czech Republic	98.6	1.4	0	17,655
Denmark	3.1	10.2	86.7	1,662
Estonia	94.2	5.8	0	430
Finland	13.6	83.0	3.4	2,737
France	0	0	100.0	5,510
Germany	90.5	4.4	5.1	55,400
Hungary	99.8	0.2	0	6,575
Ireland	33.9	31.6	34.5	440
Italy	0	0	100.0	4,499
Latvia	98.1	1.9	0	619
Lithuania	99.0	1.0	0	2,270
Luxembourg	93.9	6.1	0	163
Malta	96.5	3.5	0	85
Netherlands	87.1	12.9	0	1,245
Poland	0	0	100.0	11,155
Portugal	0	1.0	99.0	482
Romania	0	0	100.0	620
Slovakia	99.4	0.6	0	8,367
Slovenia	0	0	100.0	1,346
Spain	100.0	0	0	3,658
Sweden	23.9	73.7	2.4	3,930
United Kingdom	24.0	21.4	54.6	13,802
EU Total	**65.1**	**7.9**	**27.0**	**151,292**
Iceland	19.4	66.7	14.0	93
Liechtenstein	0	0	100.0	1
Norway	23.7	72.2	4.1	1,649

1. Only countries having submitted data for origin of case variable were included

As in previous years, the two most common *Salmonella* serovars in 2007 were *S.* Enteritidis and *S.* Typhimurium, representing 81% of all known types in human cases (7.2% were unknown), compared to 86% in 2006 (Table SA4). The top ten serovars were the same as for 2006, with the remaining same eight serovars, each representing one percent or less of the known top ten serovars, as in the previous year.

Table SA4. | ***Distribution of confirmed salmonellosis cases in humans by serovar (10 most frequent serovars), TESSy data, 2006-2007***

Top Ten TESSy					
2007			2006		
Serovar	**N**	**%**	**Serovar**	**N**	**%**
Enteritidis	81,472	64.5	Enteritidis	90,362	71.0
Typhimurium	20,781	16.5	Typhimurium	18,685	14.7
Infantis	1,310	1.0	Infantis	1,246	1.0
Virchow	1,068	0.8	Virchow	1,056	0.8
Newport	733	0.6	Newport	730	0.6
Stanley	589	0.5	Hadar	713	0.6
Hadar	479	0.4	Stanley	522	0.4
Derby	469	0.4	Derby	477	0.4
Kentucky	431	0.3	Agona	367	0.3
Agona	387	0.3	Kentucky	357	0.3
Other	18,562	14.7	Other	12,790	10.0
Total	**126,281**		**Total**	**127,305**	
Unknown	9,814		Unknown	17,359	

Source: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Italy, Latvia, Luxembourg, Malta, the Netherlands, Portugal, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

The most frequently reported phage type of *S.* Enteritidis in 2007 was PT4, which was also the most frequent phage type reported in 2006 (Table SA5). The top six most common phage types remained the same between 2006 and 2007, though PT8 surpassed PT1 in 2007, and two new additions, PT12 an PT1b, were added to the top ten list of *S.* Enteritidis phage types. PT 193 was, in 2007, the most common phage type of *S.* Typhimurium, followed by DT104. Six of the top ten *S.* Typhimurium phage types in 2007 were the same as in 2006. The reporting of phage types for these two serotypes increased substantially compared to 2006, most likely as a result of more countries reporting laboratory variables to TESSy. However, 22% of the *S.* Enteritidis and 43% of *S.* Typhimurium phage types were still reported as unknown.

Table SA5. | ***Distribution of confirmed salmonellosis cases in humans by phage type for S. Enteritidis and S. Typhimurium, 2006-2007***

2007 Top Ten TESSy						2006 Top Ten TESSy					
S. Enteritidis (N=13,604)			S. Typhimurium (N=6,525)			*S.* Enteritidis (N=7,866)			S. Typhimurium (N=1,601)		
Phage type	N	% Pos	Phage type	N	% Pos	Phage type	N	% Pos	Phage type	N	% Pos
4	3,096	22.8	193	567	8.69	4	2,384	30.3	104	459	28.7
8	1,972	14.5	104	479	7.34	1	1,537	19.5	120	163	10.2
1	1,548	11.4	120	478	7.33	8	1,129	14.4	193	141	8.8
21	824	6.1	NT	279	4.28	21	664	8.4	8	95	5.9
14b	675	5.0	104b	260	3.98	14b	547	7.0	104b	76	4.7
6	541	4.0	U302	255	3.91	6	315	4.0	1	51	3.2
12	318	2.3	RDNC	250	3.83	6a	235	3.0	56	50	3.1
6a	261	1.9	8	90	1.38	13a	118	1.5	RDNC	44	2.7
RDNC	180	1.3	U313	67	1.03	56	93	1.2	135	44	2.7
1b	128	0.9	195	64	0.98	11	85	1.1	12	41	2.6

NT: Not typeable
RDNC: reacts but does not conform
Source: Denmark, Germany, Ireland, Italy, the Netherlands, Romania, Slovenia, Spain, Sweden, the United Kingdom

3.1.2 | *Salmonella* in food

The quality of the information on *Salmonella* in food provided by MSs has improved compared to previous years. This is particularly the case in terms of quantity of data where the stage of sampling has been defined, and with the more frequent use of the 25 gram sample size. Most MSs and non-MSs provided data on *Salmonella* in various foodstuffs (Table SA6). In the report, only results based on 25 or more units tested are considered. Results from industry own-check programmes and HACCP sampling have been excluded, if possible. However, this data is presented in the Level 3 tables, whereas the details on the monitoring schemes applied in MSs are summarised in the Appendix tables SA7 (broiler and other poultry meat), SA10 (turkey meat), SA16 (pig meat) and SA17 (bovine meat).

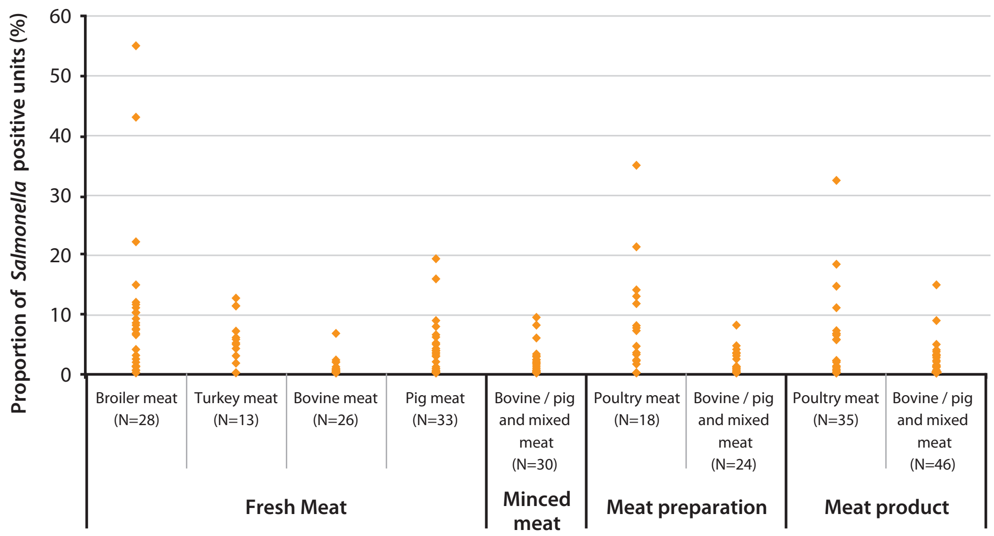
Table SA6. | ***Overview of countries reporting data for* Salmonella *in food, 2007***

	Total number of MSs reporting	Countries
Broiler meat	20	**MSs:** All except[1]: BG, CY, FR, LT, MT, UK **Non-MSs:** CH
Turkey meat	17	**MSs:** AT, CZ, EE, FI, DE, GR, HU, IE, IT, LV, LU, PL, PT, RO, SK, SI, NL
Table eggs	17	**MSs:** AT, BE, CZ, EE, DE, GR, HU, IE, IT, LV, LU, PL, PT, RO, SK, ES and NL
Pig meat	22	**MSs:** All except: BG, CY, FR, MT and UK **Non-MSs:** NO
Bovine meat	21	**MSs:** All except: BG, CY, FR, LT1, MT and UK **Non-MSs:** NO
Milk and dairy products	19	**MSs:** AT, BE, CZ, EE, DE, GR, HU, IE, IT, LV, LT, PL, PT, RO, SK, SI, ES, SE, and NL
Fruit and vegetables	18	**MSs:** AT, BE, CZ, DE, EE, HU, IE, IT, LV, PL, RO, SK, SI, ES, SE, NL, PTand UK
Fish and other fishery products[2]	17	**MSs:** AT, BE, CZ, EE, DE, GR, HU, IE, IT, NL, LV, PL, PT, RO, SK, ES and SE **Non-MSs:** NO

Note: In the following chapter, only countries reporting 25 samples or more have been included for analyses
1. Lithuania reported data for "Meat from poultry, unspecified" and "Meat from bovine animals and pigs", Sweden reported data for "Meat from poultry"
2. Include fishery products, crustaceans, live bivalve mollusc and molluscan shelfish

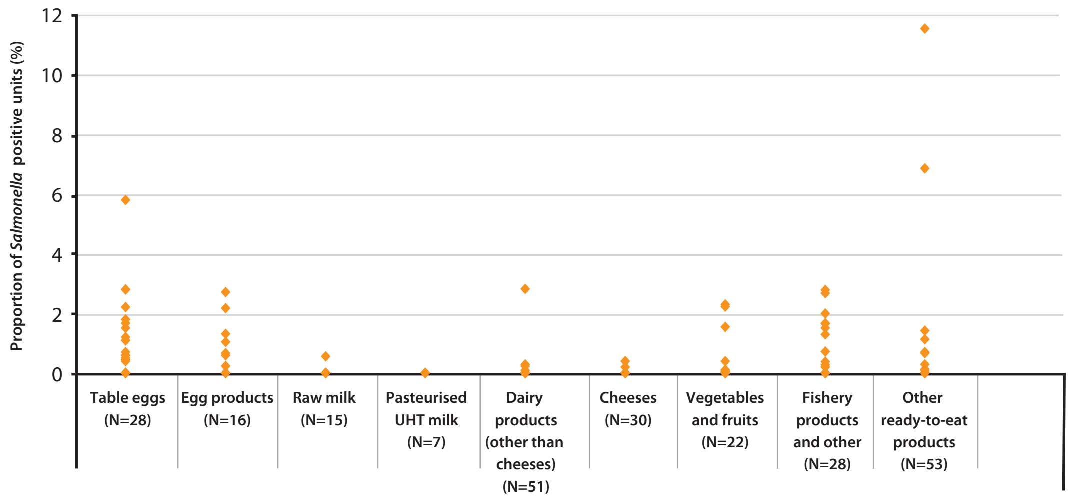
Figure SA5a presents an overview of the proportion of *Salmonella* positive samples from fresh meat, minced meat, meat products and meat preparations (from all sampling stages) reported by each MS. Figure SA5b presents the proportion of positive units in investigations of other food categories. Each point represents the result of a reported investigation with 25 tested units or more. The figures show that *Salmonella* was most often reported in fresh meat and products of meat origin, particularly in poultry meat followed by pig meat. In the other food categories, *Salmonella* was found less frequently: occasionally from table eggs, fishery products, vegetables and fruit, but seldom from milk and cheeses.

Figure SA5a. ***Proportions of* Salmonella *positive units, by meat category within the EU, 2007. Each point represents a MS investigation***



Note: Data are only presented for sample size ≥25
N= number of investigations

Figure SA5b. ***Proportions of* Salmonella *positive units, by food categories other than meat within the EU, 2007. Each point represents a MS investigation***



Note: Data are only presented for sample size ≥25
N= number of investigations

Broiler meat and products thereof

A number of MSs have applied monitoring schemes for *Salmonella* in broiler meat (Appendix, Table SA7). In 2007, 21 MSs and one non-MS reported investigations covering approximately 585,000 units of broiler meat and products thereof, and for 44,000 tested units the sampling stage was specified. The type of products sampled varied and the analyses were either performed on single samples or on a batch of broiler meats.

The occurrence of *Salmonella* in fresh broiler meat at different levels of the production chain is presented in Table SA7. Overall, 5.5% of the tested units were positive for *Salmonella* in the EU, a slight decrease compared to the proportion reported in 2006 (6.3%). However, these figures are not directly comparable, e.g. due to the variation in the reporting MSs and in the food categories covered over the years.

Most of the countries providing data on *Salmonella* in fresh broiler meat in 2007, reported positive samples. Compared to 2006, more MSs reported data at slaughter level, and in particular Romania, the Czech Republic, and Poland contributed significant numbers of samples tested. *Salmonella* was detected in all except one of the reported investigations (in Finland). Greece, Hungary and Spain recorded the highest levels of contamination, whereas six out of 18 MSs reported less than two percent positive samples.

At slaughterhouse, the reported proportion of positive samples varied among MSs from 1.0% to 43.5%, and at processing *Salmonella* was detected in 0% to 55.6% of the samples. At retail level, the range was from 2.3% to 11.6%. There was no consistent trend among MSs that reported investigations at different sampling stages regarding the most contaminated sampling stage. Approximately 20% of the tested units were without a designated level of sampling (Table SA7).

Denmark, Finland, Ireland, Sweden and Norway have had programmes for the control of *Salmonella* in live broilers for a number of years, and Finland and Norway have reported very low levels of *Salmonella* in broiler meat for several years (Table SA7). The monitoring data from Sweden include all poultry meat, not only broiler meat, and the results are therefore not included in Table SA7. However, the proportion of positive poultry meat samples in Sweden has been very low for the last four years, and in 2007, none of the 1,334 tested samples were positive.

Table SA7. **Salmonella *in fresh broiler meat (unless otherwise stated) at slaughter, processing/cutting level and retail, 2004-2007***

Country	Sample unit	Sample size	2007		2006		2005		2004	
			N	% Pos	N	% Pos	N	% Pos	N	% Pos
At slaughter										
Belgium	Single	25g	58	10.3	-	-	-	-	-	-
	Single[1]	1g/25g	-	-	69	1.5	228	5.7	83	6.0
Czech Republic	Batch	25g	1,697	1.8	-	-	-	-	-	-
Denmark	Batch	25g/50g	828	1.2	775	1.9	1,174	2.3	1,472	1.6
Estonia	Batch	25g	-	-	52	4	56	8.9	-	-
Hungary	Single	25g	232	43.5	-	-	-	-	-	-
Latvia	Single[1]	25g	100	15.0	-	-	-	-	-	-
	Batch	25g	-	-	1,081	6.9	39	5.1	70	7.1
Poland	Batch[1]	25g	1,340	7.5	-	-	-	-	-	-
Romania	Single	25g	7,698	1.0	-	-	-	-	-	-
Slovenia	Single	25g	-	-	-	-	-	-	79	1.3
Spain	Single	25g	184	22.3	93	15.1	203	13.8	151	8.6
Norway	Batch		-	-	5,420	0.02	6,056	<0.1	7,239	<0.1
Switzerland	Single	25g	1,753	0.6	-	-	-	-	-	-

Table SA7. | **Salmonella** ***in fresh broiler meat (unless otherwise stated) at slaughter, processing/cutting level and retail, 2004-2007 (contd.)***

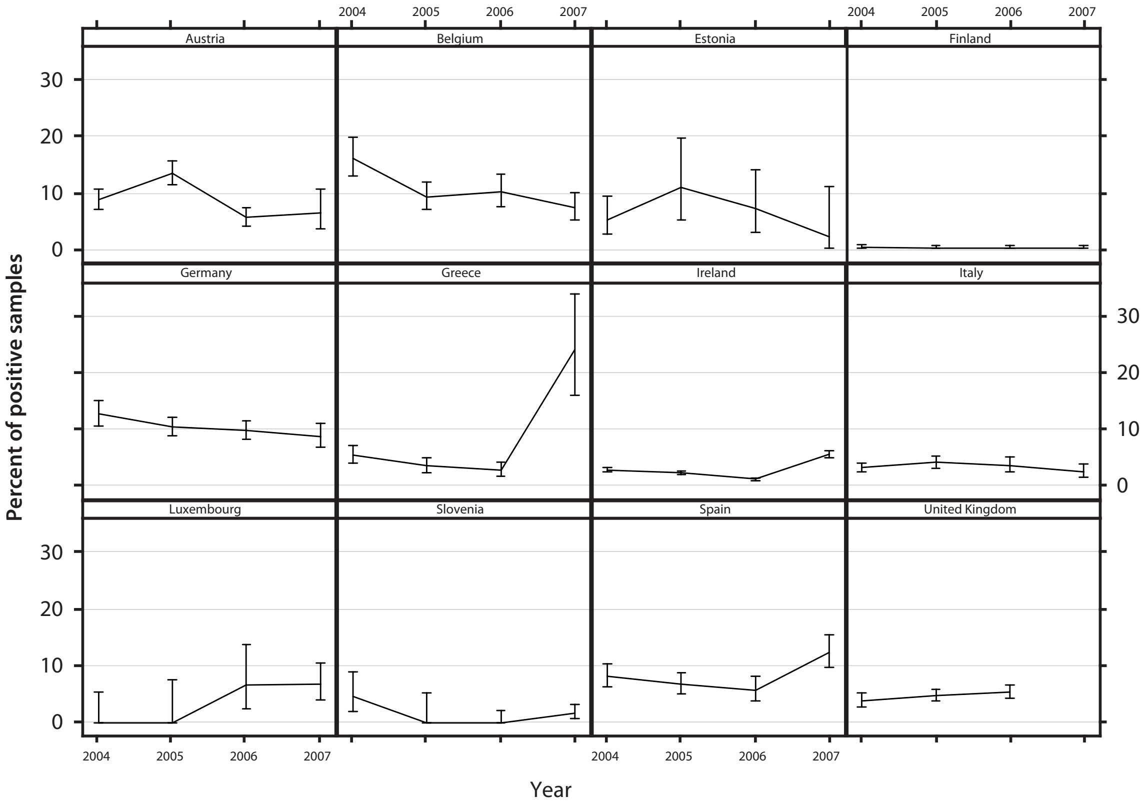
Country	Sample unit	Sample size	2007		2006		2005		2004	
			N	% Pos	N	% Pos	N	% Pos	N	% Pos
At processing/cutting plant										
Austria	Single	10g/25g	67	7.5	-	-	-	-	-	-
Belgium	Single	1g	-	-	293	13.3	260	14.2	183	8.7
	Batch	25g	170	6.5	-	-	-	-	-	-
Estonia	Batch	25g	94	1.1	90	5.6	93	21.5	42	4.8
Finland	Single	25g	757	0	752	0	772	0	777	0.1
Germany	Single	25g	36	11.1	-	-	-	-	46	6.5
Greece	Single	25g	27	55.6	805	2.6	785	2.8	-	-
Ireland	Single	Varies[2]	5,044	5.5	6,129	0.9	5,941	2.1	6,955	2.7
	Single[1]	Varies	-	-	125	0.8	1,544	2.8	-	-
	Batch	Varies[2]	261	11.5	-	-	-	-	-	-
Slovenia	Single	25g	187	0.5	172	0	70	0	30	3.3
Spain	Single	25g	144	2.8	120	4.2	146	5.5	141	2.1
Switzerland	Single	25g	1,346	0.1	-	-	-	-	-	-
At retail										
Austria	Single	10g/25g	86	5.8	-	-	-	-	-	-
Belgium	Single[3]	25g	131	9.2	40	7.5	46	2.2	126	13.5
	Single[1]	1g/25g	145	6.9	40	2.5	-	-	-	-
Estonia	Single	10g	-	-	68	10.3	51	11.8	-	-
Germany	Single	25g	714	8.5	-	-	-	-	838	12.9
Greece	Single	25g	69	11.6	-	-	33	18.2	25	0
Latvia	Single	10g	200	3.0	-	-	96	11.5	345	7.3
Luxembourg	Single	25g	254	6.7	91	6.6	47	0	66	0
Netherlands	Single	25g	1,418	8.1	1,365	8.4	1,506	9.4	1,483	7.4
Slovenia	Single	25g	343	2.3	-	-	-	-	95	7.4
Spain	Single	25g	206	10.2	294	3.4	400	3.8	495	9.7
United Kingdom	Single	25g	-	-	860	3.6	877	4	1,033	3.9
Switzerland[4]	Single	25g	415	6.5	-	-	-	-	-	-
Sampling level not stated										
Austria[5]	Single	10g/25g	54	5.6	776	5.4	1,015	13.2	1,042	8.5
Belgium	Single	1g	-	-	-	-	-	-	156	26.3
Czech Republic	Batch	25g	-	-	-	-	459	2.2	-	-
Germany[6]	Single	25g	-	-	-	-	1,391	10.3	-	-
Italy	Batch	25g	206	4.9	206	4.9	-	-	-	-
	Single	25g	736	2.4	736	2.4	1,392	4.0	1,742	3.0
Poland	Batch	10g/25g/ 300g	4,421	12.0	1,638	6.6	537	11.7	-	-
Portugal	Single	25g	-	-	-	-	50	4.0	-	-
Slovakia	Single	25g	258	0.4	258	0.4	201	7.0	-	-
United Kingdom	Single	-	-	-	-	-	914	5.5	-	-
EU Total			**28,012**	**5.5**	**16,928**	**6.3**	**20,326**	**5.0**	**17,475**	**4.6**

Note: Data are only presented for sample size ≥25

1. Carcasses, data based on feacal or caecal samples excluded
2. 25g in 2007
3. Meat with skin
4. In Switzerland, from the 415 samples 245 originated from Switzerland (0.4% positive), 168 were imported (14.8% positive) and from two samples the origin was unknown
5. Total of sampling at processing and retail
6. Total of all samlping levels in 2005

MS specific trends in *Salmonella* in fresh broiler meat over the last four years are presented in Figure SA6a. MS trends were not tested for statistical significance, but there appears to be a decreasing trend in the proportion of positive samples for *Salmonella* in Austria, Belgium, Estonia, Germany and Italy. In Finland, the reported proportion of positive samples has been very low throughout the years. In Greece, the proportion of positive samples increased markedly in 2007, but the 2007 data only includes 27 tested samples. Ireland, reported a slight increase in the proportion of *Salmonella* positive samples, based on substantial numbers of tested samples. The United Kingdom did not provide data for 2007.

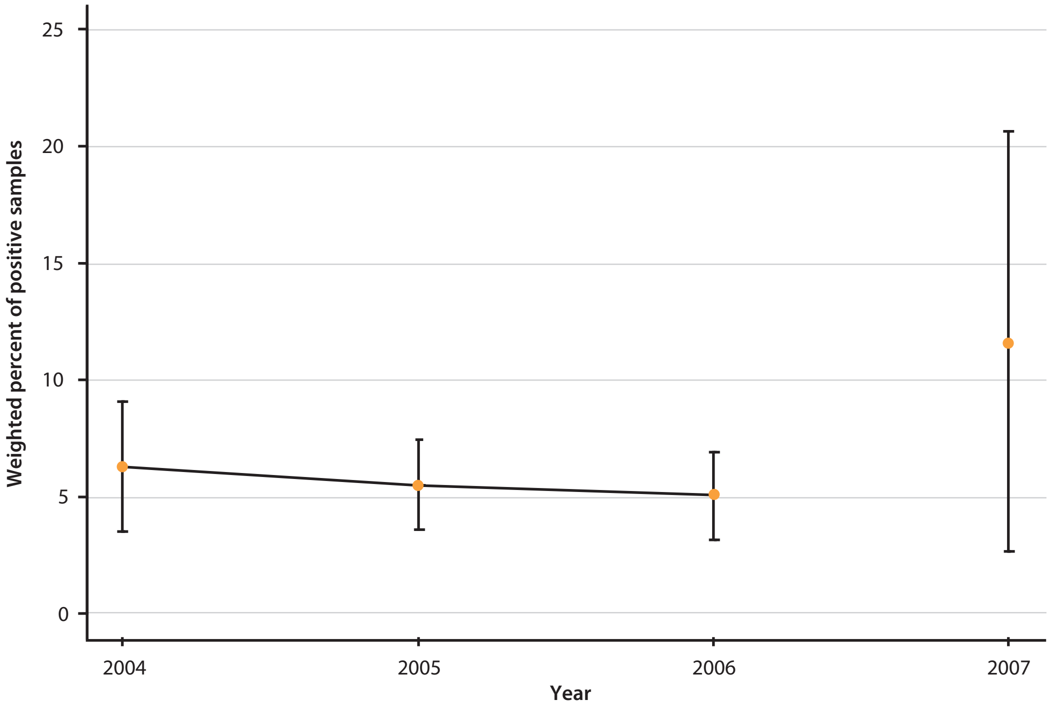
Figure SA6a. | **Salmonella *in fresh broiler meat*[1]*, proportion of positive samples and 95% CI*[2] *in selected MSs*[3]*, 2004-2007***



1. Combined data (samples taken at slaughter, at processing/cutting plant or at retail) have been used to estimate the percentage of *Salmonella* positive fresh broiler meat samples. Batch based data excluded.
2. Vertical bars indicate exact binomial 95% confidence intervals
3. Includes only MSs with data from a minimum of three years

The weighted mean proportions of *Salmonella* positive samples in the group of MSs that reported consistently over the last three or four years is presented in Figure SA6b. In this analysis, MS specific results were weighted by national production figures. The 2007 weighted mean and its large confidence intervals were strongly influenced by the missing data from the United Kingdom and, to lesser a extent, by the high proportion of positive units reported by Greece. Therefore, the 2007 results were not considered comparable with those of previous years and the trend over the years was not tested (Figure SA6b). See section 4.2 in Materials and Methods and notes to Figure SA6b for descriptions of statistics and weighting.

Figure SA6b. | ***Salmonella* in fresh broiler meat, weighted[1] proportions of positive samples with 95% confidence intervals, in 12 MSs[2], 2004-2007**



1. Weight was the ratio between the broiler population size per MS and the number of tested samples per MS per year. Numbers of broilers per MS were based on the population data reported for 2006, and supplemented with EUROSTAT data from 2005. Batch based data was excluded
2. Includes only MSs with data from at least three consecutive years: AT, BE, EE, FI, DE, GR, IE, IT, LU, SI, ES and UK. UK did not provide data for 2007

In 2007, several MSs reported *Salmonella* findings in non-ready-to-eat (non-RTE) broiler meats, and the proportion of *Salmonella* positive samples in non-RTE products and preparations from broiler meat varied between 0% and 35.3%. The highest contamination level was reported by Greece in non-RTE meat products (32.7%, single samples), and in Hungary for non-RTE meat preparations (35.3%, batches) (Table SA8a). As expected, in RTE broiler meat products most MSs reported no positive samples (Table SA8b). The data reported by MSs in the investigations of non-RTE products (single samples) are illustrated in Figure SA7.

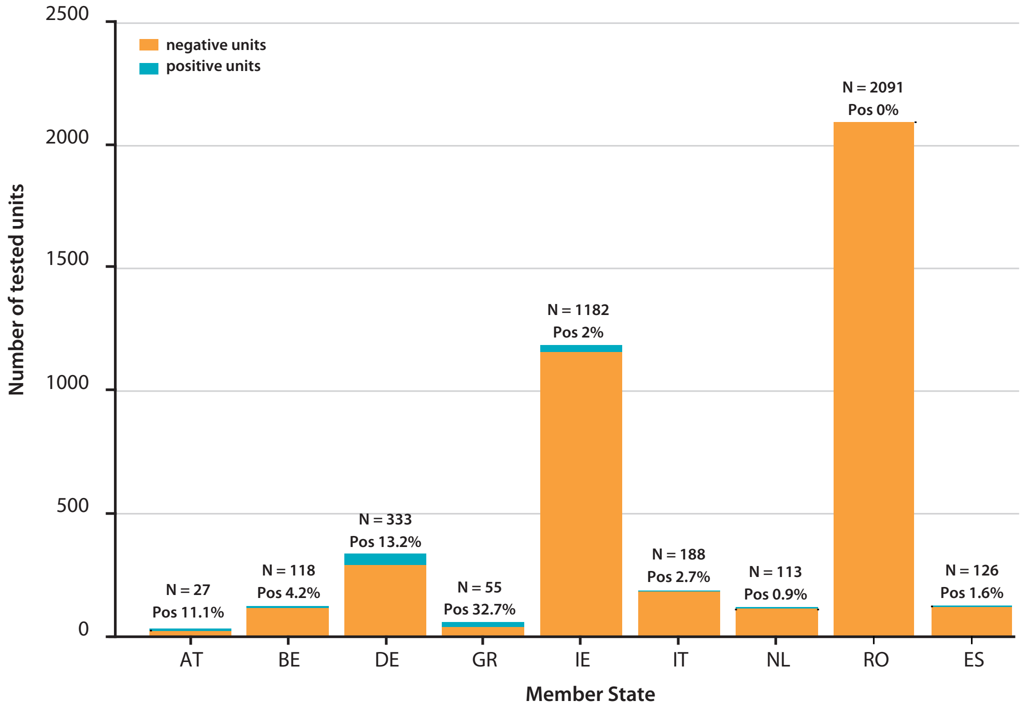
The data reported from 2007 has increased compared to 2006, as Poland, Romania and the Czech Republic all reported investigations with substantial sample sizes with the sampling stage specified.

Table SA8a. | **Salmonella** ***in non-ready-to-eat broiler meat preparation and meat products, 2007***

Country	Description	Sample unit	Sample size	N	% Pos
At processing plant					
Belgium	Meat product	Single	10g	32	0
	Meat preparation	Batch	10g	81	18.5
Czech Republic	Meat preparation	Batch	25g	1,299	1.5
Germany	Meat preparation	Single	25g	34	11.8
Greece	Meat product	Single	25g	55	32.7
Ireland	Meat product	Single	25g	1,182	2.0
Poland	Meat preparation	Batch	10g/25g	781	21.4
	Meat product	Batch	10g/25g	2,367	6.6
	Minced meat	Batch	25g	241	10.8
Spain	Meat product	Single	25g	36	5.6
At retail					
Austria	Meat product	Single	10g	27	11.1
Belgium	Minced meat	Batch	10g	70	12.9
	Meat product	Single	10g	86	5.8
	Meat preparation	Batch	10g/25g	446	13.0
Germany	Meat preparation	Single	25g	128	14.1
Hungary	Meat preparation	Batch	10g	346	35.3
	Minced meat	Batch	10g	258	13.6
	Meat product	Batch	10g	193	2.1
Latvia	Meat preparation	Batch	10g	28	0
Netherlands	Meat preparation	Single	25g	49	2.0
	Meat product	Single	25g	64	0
Romania	Minced meat	Single	25g	275	0
	Meat preparation	Single	25g	842	0
	Meat product	Single	25g	974	0
Spain	Meat product	Single	25g	90	1.1
Sampling level not stated					
Germany	Meat preparation	Single	25g	171	12.9
Italy	Meat products	Single	25g	49	4.1
	Meat products	Batch	25g	64	3.1
	Meat preparation	Single	25g	139	2.2
Slovakia	Meat products	Batch	10g/25g	63	0
Total (14 MSs)				**10,470**	**6.8**

Note: Data are only presented for sample size ≥25

Figure SA7. | ***Salmonella* in non-ready-to-eat products (minced meat, meat preparations and meat products) from broiler meat in reporting MSs (investigations of single samples), 2007**



Note: N is the total number of tested units

Table SA8b. | ***Salmonella* in ready-to-eat broiler meat preparation and product samples, 2007**

Country	Description	Sample unit	Sample size	N	% Pos
At processing plant					
Czech Republic	Meat product	Batch	25g	230	0
Estonia	Meat product	Single	10g	28	0
Germany	Meat product	Single	25g	30	6.7
Ireland	Meat product	Single	25g	3,476	0.03
Poland	Meat product	Batch	10g/25g	573	0.9
At retail					
Austria	Meat product	Single	25g	34	0
Czech Republic	Meat product	Batch	10g	44	0
Estonia	Meat product	Single	10g	31	0
Germany	Meat product	Single	25g	198	0.5
Hungary	Meat product	-	25g	229	0
Ireland	Meat product	Single	25g	980	0.1
Romania	Meat product	Single	25g	816	0
Sampling level not stated					
Germany	Meat products	Single	25g	22	0
Slovakia	Meat products	Batch	25g	54	0
Total (9 MSs)				**6,745**	**0.2**

Note: Data are only presented for sample size ≥25

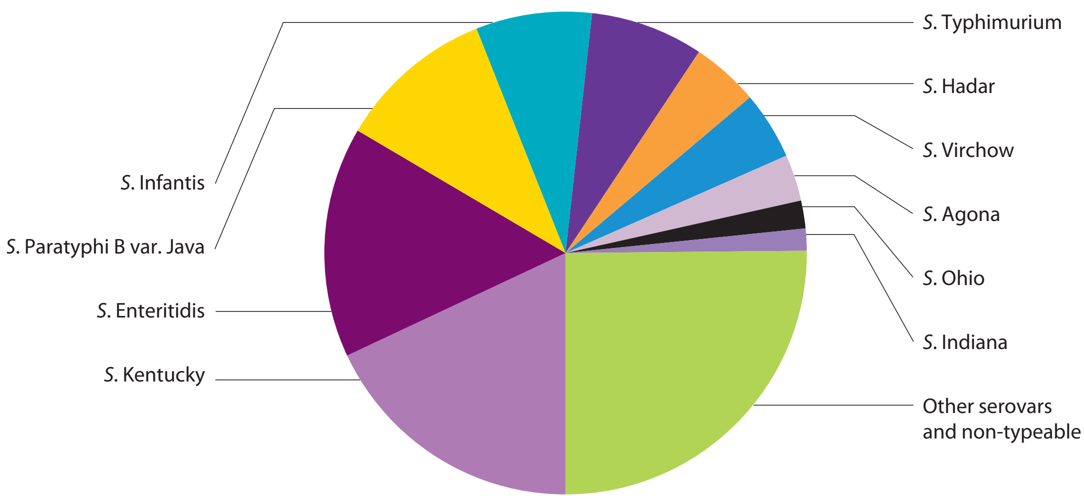
Eleven MSs reported specific data on *Salmonella* serovar distribution in broiler meat. Overall, *S.* Kentucky was the most frequent serovar reported from broiler meat in 2007 (Table SA9). However, this result was due to a high number of isolates from Ireland where this serovar is dominant. As in previous years, *S.* Enteritidis, *S.* Infantis, *S.* Typhimurium and *S.* Paratyphi B var. Java were among the most common serovars and the serovar distribution in broiler meat in 2007 was largely comparable to the distribution in 2004 to 2006.

Table SA9. | ***Distribution of the ten most common* Salmonella *serovars in broiler meat, 2007***

		% positive										
Countries	**No. of isolates serotyped**	***S.* Kentucky**	***S.* Enteritidis**	***S.* Paratyphi B var. Java**	***S.* Infantis**	***S.* Typhimurium**	***S.* Hadar**	***S.* Virchow**	***S.* Agona**	***S.* Ohio**	***S.* Indiana**	**Other serovars, non-typeable, and unspecified**
Total no. of isolates	**1,494**	**262**	**247**	**153**	**105**	**107**	**70**	**69**	**49**	**29**	**27**	**376**
Austria	96	1.0	35.4	-	21.9	1.0	3.1	-	-	-	4.2	33.3
Czech Republic	53	3.8	34.0	-	-	3.8	1.9	-	9.4	15.1	3.8	28.3
Germany	266	-	26.3	25.2	8.6	7.9	2.3	1.5	-	7.1	5.3	15.8
Ireland	332	77.7	4.2	-	0.9	0.6	-	0.6	10.3	-	0.3	5.1
Italy	201	-	10.0	-	1.5	9.5	14.9	-	-	-	-	64.2
Latvia	21	-	95.2	-	-	-	-	-	-	-	-	4.8
Luxembourg	21	-	19.0	14.3	4.8	33.3	4.8	-	-	-	-	23.8
Netherlands	134	-	3.0	61.9	9.7	1.5	-	4.5	0.7	1.5	4.5	12.7
Poland	283	-	13.8	-	13.8	18.0	5.3	8.5	2.5	-	-	38.2
Romania	75	-	21.3	-	2.7	-	18.7	44.0	-	-	-	13.3
Slovakia	13	7.7	61.5	-	-	15.4	-	-	15.4	-	-	-
Proportion of serotyped isolates		**17.5**	**16.5**	**10.2**	**7.0**	**7.2**	**4.7**	**4.6**	**3.3**	**1.9**	**1.8**	**25.2**

Note: Data are only presented for sample size ≥10. The serovar distribution (% isolates) was based on the number of reported serotyped isolates, including non-typeable and unspecified isolates. Ranking was based on the sum of all reported serovars. Some countries may not have a strict separation of serotypes achieved from meat and farm level

Figure SA8. | ***Distribution of* Salmonella *serovars in broiler meat in the EU (11 MSs), 2007***



Turkey meat and products thereof

The occurrence of *Salmonella* in fresh turkey meat at different stages of the production line in 2007 are presented in Table SA10. In non-ready-to-eat meat, 6.8% overall of the tested units were positive for *Salmonella* in the EU, and findings range from zero findings in Finland to 14.3% in batches of minced meat from Poland. The overall level of contamination in RTE products from turkey meat was low (0.6%), but findings ranged from 0% to 14.7% in single samples of meat products in Germany.

Table SA10. | **Salmonella *in turkey meat and products thereof, 2007***

Country	Description	Sample unit	Sample size	N	% Pos
NON-READY-TO-EAT					
At slaughterhouse					
Czech Republic	Fresh meat	Batch	25g	166	12.7
Hungary	Fresh meat	Single	25g	166	11.4
Poland	Carcass	Batch	25g	1,135	11.4
Romania	Fresh meat	Single	25g	84	0
Cutting and processing plant					
Czech Republic	Meat preparation	Batch	25g	67	4.5
	Meat product	Batch	25g	110	6.4
Finland	Fresh meat	Single	25g	517	0
Germany	Fresh meat	Single	25g	34	2.9
	Meat preparation	Single	25g	25	8.0
Ireland	Fresh meat	Single	25g	475	0.8
	Meat product	Single	25g	181	0.6
Poland	Meat preparation	-	10g/25g	748	7.2
	Meat product	Batch	25g	476	5.7
	Minced meat	Batch	25g	558	14.3
Slovenia	Fresh meat	Single	25g	98	5.1
Retail					
Austria	Fresh meat	Single	10g/25g	73	4.1
Germany	Fresh meat	Single	25g	513	6.0
	Meat preparation	Single	25g	132	7.6
Hungary	Minced meat	Batch	10g	26	11.5
Netherlands	Fresh meat	Single	25g	595	5.7
	Meat preparation	Single	25g	118	3.4
Romania	Meat preparation	Single	25g	41	0
Slovenia	Fresh meat	Single	25g	42	4.8
Sampling level not stated					
Italy	Fresh meat	Single	25g	121	1.6
	Fresh meat	Batch	25g	75	8
	Meat preparation	Single	25g	32	3.1
	Minced meat	Batch	25g	45	6.7
Poland	Fresh meat	Batch	25g	1784	7.1
Total (11 MSs)				**8,437**	**6.8**

Table SA10. | **Salmonella *in turkey meat and products thereof, 2007 (contd.)***

Country	Description	Sample unit	Sample size	N	% Pos
READY-TO-EAT					
Cutting and processing plant					
Germany	Meat product	Single	25g	34	14.7
Ireland	Meat product	Single	25g	622	0
Poland	Meat product	Batch	10g/25g/200g	698	0.3
Retail					
Germany	Meat product	Single	25g	113	1.8
Ireland	Meat product	Single	25g	140	0
Total (3 MSs)				**1,607**	**0.6**

Note: Data are only presented for sample size ≥25

Eggs and egg products

Several MSs reported data from investigations of table eggs and the findings are presented in Table SA11. In total, 0.8% of the tested units was positive for *Salmonella*, which corresponds to the level found in 2006. Germany and Romania reported most of the investigations of single samples and found 0.7% and 0% of the samples positive at retail, respectively. These MSs reported the majority of data from eggs in 2006 as well. Control of *Salmonella* in the table egg sector is mainly, and most effectively, carried out by monitoring and controlling *Salmonella* in laying hen flocks. These programmes are described in Appendix Tables SA5 and SA6.

Twelve MSs reported results of investigations of egg products, and on average 0.2% of the approximately 8,500 tested units were found positive. The results ranged from 0% to 2.2% in single samples from Italy (N=184).

Table SA11. | **Salmonella *in table egg samples, 2007***

Country	Sample unit	Sample Size	N	% Pos
At packing centre				
Czech Republic	Batch	25g	428	0.5
Estonia	Single	25g	68	0
Germany	Single	25g	795	0.6
Greece	Single	25g	128	0
Ireland	Single	25g	88	1.1
Italy	Batch	25g	155	5.8
	Single	25g	186	2.2
Latvia	Single	25g	102	0
Poland	Batch	-	605	1.2
Slovakia	Batch	25g	95	1.1
Spain	Single	25g	1,653	2.8
Romania	Single	25g	2,970	0
At retail				
Austria	Single	Varies	225	0.4
Belgium	Single	25g	117	0
Czech Republic	Batch	25g	120	0
Germany	Single	25g	5,521	0.7
Greece	Single	25g	101	0
Hungary	Batch	25g	158	0
Italy	Single	25g	160	0.6
Luxembourg	Single	25g	258	0.4
Netherlands	Batch	25g	975	0
Poland	Batch	-	277	1.8
Romania	Single	25g	1,043	0
Slovakia	Batch	25g	133	1.5
Spain	Single	25g	98	1.0
Sampling level not stated				
Germany	Single	25g	66	0
Italy	Single	25g	60	1.7
Spain	Single	25g	41	2.8
Total (16 MSs)			**16,626**	**0.8**

Note: Data are only presented for sample size ≥25

Only five MSs reported the *Salmonella* serovar distribution of ten or more isolates from eggs and egg products (based on data from the prevalence tables and serovar tables). *S.* Enteritidis was by far the most dominant serovar reported (66.4%, Table SA12). Several of the other serovars listed among the ten most common have also been reported in low numbers in previous years.

Table SA12. ***Distribution of the ten most common* Salmonella *serovars in eggs and egg products, 2007***

		% positive									
Countries	**Total singles and hatches**	**S. Enteritidis**	**S. Livingstone**	**S. Rissen**	**S. Anatum**	**S. Derby**	**S. Infantis**	**S. Typhimurium**	**S. Cerro**	**S. Ohio**	**Other serotypes or unspecified**
Total no. of samples/hatches	**220**	**146**	**7**	**6**	**4**	**2**	**16**	**6**	**1**	**1**	**31**
Czech Republic	**11**	100.0	-	-	-	-	-	-	-	-	-
Germany	**128**	83.6	-	-	-	-	10.2	3.9	-	-	2.3
Italy	**19**	52.6	-	-	-	-	-	-	-	-	47.4
Poland	**12**	25.0	-	-	-	-	-	-	-	-	75.0
Spain	**50**	30.0	14.0	12.0	8.0	4.0	6.0	2.0	2.0	2.0	20.0
EU%		**66.4**	**3.2**	**2.7**	**1.8**	**0.9**	**7.3**	**2.7**	**0.5**	**0.5**	**14.1**

Note: Data are only presented for sample size ≥10. The serovar distribution (% isolates) was based on the number of positive isolates, including non-typeable isolates. Ranking was based on the sum of all reported serovars

Pig meat and products thereof

Many of the national monitoring programmes on *Salmonella* in pig meat and products thereof are based on sampling at the slaughterhouse and meat cutting plants. At the slaughterhouse, sampling is carried out through carcass swabbing or collection of meat samples and testing of 25 grams, except for Germany that tested 10 gram samples only. At processing and retail, all MSs analyse 25 gram samples. The MS monitoring programmes for *Salmonella* in pig meat are described in Appendix Table SA16.

The occurrence of *Salmonella* in fresh pig meat at different stages of the production line during the period 2004 to 2007 is presented in Table SA13. Overall, 1.1% of the tested units were found positive for *Salmonella* in 2007, which is a somewhat higher proportion than that reported in 2006 (0.9%). In general, the proportion of *Salmonella* positive samples in pig meat was at moderate levels at slaughterhouse, where the findings based on carcass swabbing ranged from 0% to 19.4%. Finland, Estonia, and Slovakia reported no positive samples at slaughter, and very low levels (<0.1%) were recorded by Sweden and Norway. Belgium reported the highest proportion of positive samples (16.0% and 19.4%) at slaughter.

At processing and cutting plants, *Salmonella* was found in less than 0.1% and up to 8.9% in fresh pig meat samples. Germany reported the highest proportion of positive samples collected at processing and cutting plants. At retail, *Salmonella* was reported in 0% to 6.1% of samples. Greece observed no positive samples (n=30) and Spain recorded the highest proportion of positive samples (6.1%) at retail.

During the last four years, Estonia, Finland, Sweden and Norway have reported no positive samples or very low levels (0.1%-0.4%) of positive samples in fresh pig meat collected at different sampling levels. Data from Sweden includes both pig and bovine meat, and has not been included in the table SA13.

Table SA13. | **Salmonella *in fresh pig meat, at slaughter, cutting/processing level and retail, 2004-2007***

Country	Sample unit	Sample size	2007		2006		2005		2004	
			N	% Pos	N	% Pos	N	% Pos	N	% Pos
At slaughterhouse										
Belgium	Single	600 cm²	293	16.0	-	-	-	-	374	12.3
	Single[1]	100 cm²	386	19.4	-	-	442	9.3	-	-
Czech Republic	Batch	100/400 cm²	6,979	0.7	4,077	0.2	2,445	1.9	-	-
Denmark[2]	Batch[1]	300 cm²	27,290	0.7	27,892	0.9	30,730	1.0	33,890	1.3
Estonia	Single[1]	1,400 cm²	636	0	683	0.1	671	0	648	0
Finland	Single[1]	1,400 cm²	6,363	0	6,454	0	6,609	0	6,576	<0.1
Germany	Single	10g	5,233	3.8	-	-	-	-	4,744	0.5
Hungary	Single	25g	178	3.4	-	-	-	-	8,257	1.3
Latvia	Single	-	3,500	0.2	-	-	-	-	185	1.1
Lithuania	Batch	25g	480	1.9	-	-	-	-	-	-
Slovakia	Single	100 cm²	125	0	-	-	-	-	-	-
Spain	Single	25g	315	4.8	297	6.4	263	4.9	147	10.2
Sweden	Single[1]	1,400 cm²	6,239	<0.1	5,918	0	5,764	<0.1	5,941	0
Norway	Single	1,400 cm²	3,472	0.1	3,122	0	3,157	0	2,456	0
At cutting/processing plants										
Belgium	Single	25g	537	4.1	328	2.4	300	7.3	241	10.4
Estonia	Single	25g	520	0.4	347	0	309	0	442	0.2
Finland	Single	25g	2,329	<0.1	2,311	0	3,226	0	3,092	0
Germany	Single	25g	304	8.9	-	-	-	-	-	-
Ireland	Single	25g	1,992	2.9	2,908	1.7	2,803	1.6	4,485	2.3
Slovenia	Single	25g	168	0	159	0	113	0	188	0
Spain	Single	25g	63	7.9	88	0	263	4.9	81	4.9
At retail										
Austria	Single	10g/25g	400	1.0	96	0	98	<0.1	42	4.8
Germany	Single	25g	1,664	2.8	2,101	2.9	1,831	3.2	1,217	3.9
Greece	Single	25g/200g	30	0	-	-	28	3.6	-	-
Greece	Batch	25g	-	-	-	-	47	0	30	0
Luxembourg	Single	25g	39	5.1	-	-	-	-	-	-
Netherlands	Single	25g	277	3.2	422	3.1	356	2.2	333	1.2
Slovenia	Single	25g	385	0.3	-	-	-	-	-	-
Spain	Single	25g	66	6.1	227	11.5	174	0	125	3.7

Table SA13. **Salmonella *in fresh pig meat, at slaughter, cutting/processing level and retail, 2004-2007 (contd.)***

Country	Sample unit	Sample size	2007		2006		2005		2004	
			N	% Pos	N	% Pos	N	% Pos	N	% Pos
Sampling level not stated										
Austria	Single	25g	-	-	33	3.0	98	1.0	-	-
Cyprus	Batch	25g	-	-	-	-	60	6.7	-	-
Hungary	Single	25g	-	-	168	0	-	-	-	-
Italy	Single	25g	2,430	2.9	1,880	3.8	2,010	2.6	1,069	3.7
	Batch	25g	170	3.5	-	-	-	-	-	-
Poland	Batch	-	9,715	0.4	3,112	0.9	1,153	2.6	-	-
Portugal	Single	25g	-	-	-	-	30	16.7	-	-
Slovakia	Single	10g/25g	2,025	0	-	-	247	0	-	-
	Batch	25g	-	-	536	0.4	-	-	-	-
EU Total			**81,131**	**1.1**	**60,037**	**0.9**	**60,070**	**1.1**	**72,107**	**1.2**

Note: Data are only presented for sample size ≥25

1. Carcasses of fattening and adult pigs
2. In Denmark, the majority of samples are tested as pools of five carcass swabs. At small slaughterhouses, carcass samples are tested individually. Prevalence of *Salmonella* in single swab samples is estimated from results of pooled analysis

Data on *Salmonella* in non-ready-to-eat (non-RTE) pig minced meat, meat preparations, and meat products are presented in Table SA14a. A substantial number of samples was analysed, and the Czech Republic and Poland reported 69% of all samples tested. Overall, 0.9% of the tested units were positive for *Salmonella*, which is similar to the level in 2006 (0.7%). At processing stage, the findings ranged from 0% to 3.1% and *Salmonella* was detected in most of the investigations. The proportion of *Salmonella* positive findings was highest at retail compared to processing level and ranged from 0% to 8.1%. Italy and Slovakia reported several investigations with a total of 3,489 samples not specifying sampling stage, and the proportion of positive units found varied between 0% and 9.4%.

Table SA14a. **Salmonella *in non-RTE minced meat, meat preparations and meat products from pig meat, 2007***

Country	Description	Sample unit	Sample size	N	% Pos
At processing plant					
Czech Republic	Meat preparation	Batch	25g	4,020	0.2
	Meat product	Batch	25g	203	0
	Minced meat	Batch	25g	2,618	0.1
Estonia	Meat preparation	Single	10g	102	1.0
Germany	Meat preparation[1]	Single	25g	34	2.9
	Meat product	Single	25g	355	3.1
Ireland	Meat product	Single	25g	4,831	1.0
Poland	Meat preparation	Batch	-	5,165	0.5
	Meat product	Batch	-	5,429	0.5
	Minced meat	Batch	-	8,219	0.2
At retail					
Austria	Meat preparation	Single	25g	58	3.4
	Meat preparation	Single	10g	68	0
	Minced meat	Single	10g	185	1.6
Germany	Meat preparation[1]	Single	25g	270	1.1
	Meat product	Single	25g	704	2.1
	Minced meat	Single	25g	151	1.3
Hungary	Meat product	Single	25g	147	15.0
	Minced meat	Single	10g	387	1.3
Latvia	Meat product	Single	10g	125	4.8
Luxembourg	Meat preparation	Single	25g	62	0
	Meat product	Single	25g	28	3.6
Netherlands	Meat preparation	Single	25g	37	8.1
	Minced meat	Single	25g	34	5.9
Portugal	Meat product	Batch	25g	125	0
	Minced meat	Batch	10g	75	2.7
Sampling level not stated					
Italy	Meat preparation	Batch	25g	110	0
	Meat preparation	Single	25g	1,668	4.6
	Meat product	Single	25g	680	2.9
	Minced meat	Single	25g	48	0
	Minced meat	Batch	25g	170	9.4
Slovakia	Meat preparation	Batch	10g	383	0
	Meat product	Batch	10g, 25g	198	0
	Minced meat	Single	25g	232	0.4
Total (13 MSs)				**36,921**	**0.9**

Note: Data are only presented for sample size ≥25

1. Data may also include bovine meat

In ready-to-eat products of pig meat, *Salmonella* was detected in 15 of the 31 investigations with 0.1% to 8.9% positive findings, and overall 4.1% of the tested units were positive. Some MSs, such as Poland and Hungary, reported a substantial amount of data without stating the sampling stage, where 8.9% and 3.9% of samples were positive, respectively. The highest proportion of positive samples were reported for minced meat and meat preparations intended to be eaten raw (Table SA14b).

Table SA14b. | **Salmonella *in ready-to-eat pig minced meat, meat preparations and meat products from pig meat, 2007***

Country	Description	Sample unit	Sample size	N	% Pos
At processing plant					
Czech Republic	Meat product	Batch	25g	1,898	0.1
Germany	Meat product	Single	25g	105	0
	Minced meat	Single	25g	249	3.2
Greece	Meat product	Single	25g	89	0
Ireland	Meat product	Single	25g	4,276	0.2
Poland	Meat preparation	Batch	-	710	0.8
	Minced meat	Batch	-	49	8.2
At retail					
Austria	Meat product	Single	25g	144	0
Belgium	Meat product	Single	25g	63	0
Czech Republic	Meat product	Batch	25g	50	0
Germany	Meat product	Single	25g	847	0.1
	Minced meat	Single	25g	525	2.3
Hungary	Meat preparation, raw	Batch	10g	240	3.3
	Meat product	Batch	25g	415	0.2
Ireland	Meat product	Single	25g	882	0
Luxembourg	Meat product	Single	25g	26	0
Portugal	Meat product	Batch	25g	465	1.3
Slovenia	Meat product	Batch	25g	42	0
Sampling level not stated					
Hungary	Meat product	-	25g	2,610	3.9
Italy	Meat preparation	Single	25g	501	1.0
	Meat product	Single	25g	674	0.7
	Meat product	Batch	25g	692	1.9
Poland	Meat product	Batch		10,476	8.9
Slovakia	Meat product	Single	25g	30	0
	Meat product	Batch	25g	912	0
Total (13 MSs)				**26,970**	**4.1**

Note: Data are only presented for sample size ≥25

Eight MSs reported specific data of *Salmonella* serovars in pig meat. *S.* Typhimurium and *S.* Derby were the most frequently isolated serovars in pig meat in 2007 (Table SA15). As in previous years *S.* Infantis was also among the most common serovars and the serovar distribution in pig meat in 2007 was largely comparable to the distribution in 2004 to 2006.

Table SA15. | ***Distribution of the ten most common* Salmonella *serovars in pig meat, 2007***

		% positive										
Countries	**No. of isolates serotyped**	***S.* Typhimurium**	***S.* Derby**	***S.* 1,4,5,12:i:-**	***S.* Infantis**	***S.* Rissen**	***S.* Bredeney**	***S.* Group B**	***S.* London**	***S.* Brandenburg**	***S.* Enteritidis**	**Other serovars, non-typeable, and unspecified**
Total no. of isolates	**1,281**	**482**	**269**	**57**	**51**	**43**	**36**	**31**	**21**	**20**	**17**	**254**
Czech Republic	42	21.4	40.5	-	-	-	2.4	-	2.4	-	2.4	31.0
Denmark	185	41.6	29.2	-	5.4	-	-	-	-	-	0.5	23.2
Germany	178	57.9	11.2	-	3.9	-	-	17.4	1.7	0.6	2.8	4.5
Ireland	117	45.3	21.4	-	0.9	-	10.3	-	4.3	3.4	0.9	12.9
Italy	491	24.2	24.0	11.6	5.7	8.1	3.5	-	-	-	0.6	22.2
Latvia	30	20.0	16.7	-	-	-	6.7	-	-	20.0	10.0	26.7
Netherlands	185	57.8	11.9	-	0.5	-	0.5	-	5.4	4.9	-	18.9
Romania	54	14.8	14.8	-	7.4	5.6	5.6	-	3.7	-	5.6	42.6
Proportion of serotyped isolates		**37.6**	**21.0**	**4.4**	**4.0**	**3.4**	**2.8**	**2.4**	**1.6**	**1.6**	**1.3**	**19.8**

Note: Data are only presented for sample size ≥10. The serovar distribution (% isolates) was based on the number of serotyped isolates, including non-typeable isolates. Ranking was based on the sum of all reported serovars. Some countries may not have a strict separation of serovars achieved from meat and farm level

Information from the baseline survey on the prevalence of *Salmonella* in slaughter pigs, 2006-2007

From October 2006 to September 2007, an EU-wide fully harmonised *Salmonella* baseline survey was carried out in slaughter pigs. Norway participated in the survey on a voluntary basis whereas Malta and Romania did not provide data.

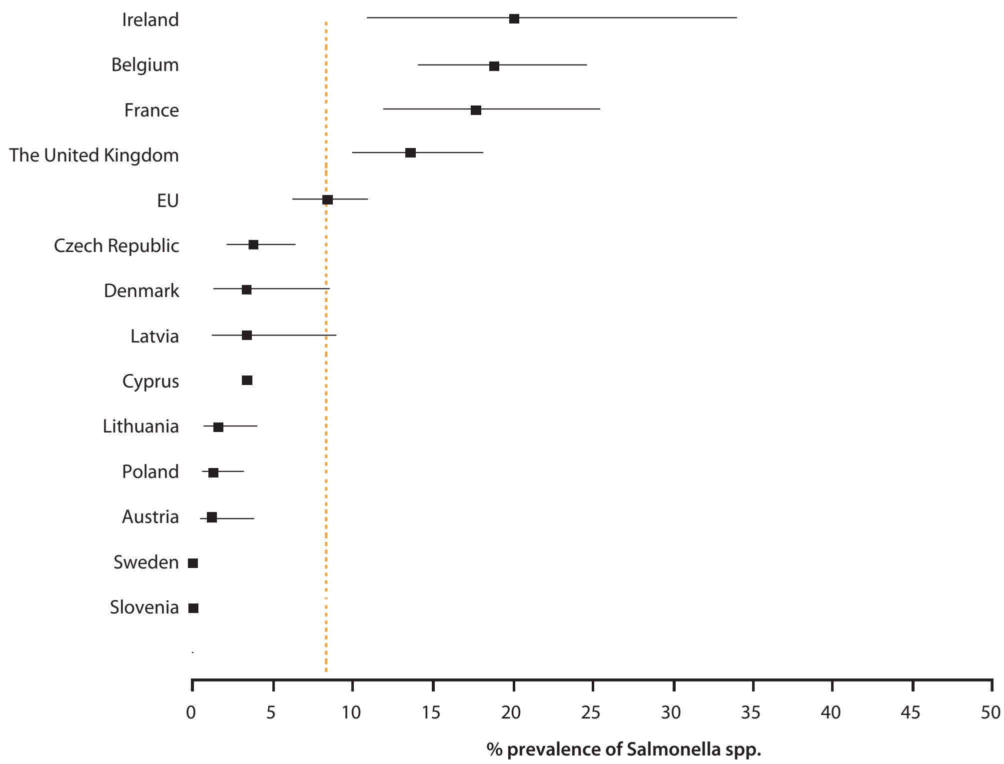
The survey was carried out in accordance with Regulation (EC) No 2160/2003, which foresees the laying-down of an EU target for the reduction of *Salmonella* prevalence in slaughter pigs. Therefore, comparable data on the current prevalence in MSs was required. Slaughter pigs were randomly selected from slaughterhouses that together accounted for 80% of pigs slaughtered within each MS. Ileo-caecal lymph nodes were collected for bacteriological analyses in all participating countries and in addition some MSs sampled carcass surfaces with swabs.

Salmonella prevalence on surface of carcasses

Thirteen MSs collected both ileo-caecal lymph nodes and carcass swabs from the same pigs during the baseline survey. Carcass swabs were collected at the end of the slaughter line, after evisceration and before chilling, to determine the prevalence of surface contamination with *Salmonella*. The weighted proportion of carcasses contaminated with *Salmonella* was 8.3% in the group of 13 reporting MSs (Figure SA16). At MS level, the proportion of contaminated carcasses varied between 0% and 20.0%.

For comparison, the proportion of *Salmonella* positive samples in routine monitoring varied between 0% and 19.4% at slaughterhouse level as reported by MSs in the annual zoonoses report 2007 (Table SA13); however these data were based on both meat samples and swab samples. In MSs reporting data for both the baseline survey and routine monitoring, the level of carcass contamination seems to be higher in the baseline survey than in routine monitoring.

Figure SA9. | ***Observed prevalence of carcasses contaminated with* Salmonella *spp., with 95% confidence intervals, in 13 MSs, baseline survey 2006-2007***



Note. The vertical line indicates the EU weighted mean

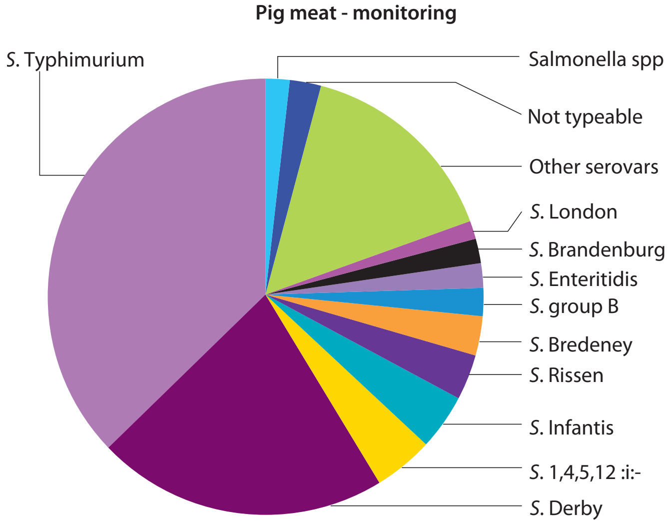
In total, 30 different *Salmonella* serovars were reported from the surface samples of the slaughter pig carcasses by the 13 MSs that carried out the test in the baseline survey. The five most frequently isolated serovars from carcasses were, in decreasing order: *S.* Typhimurium (49.5%), *S.* Derby (24.4%), *S.* Infantis (3.4%), *S.* Bredeney (2.1%) and *S.* Brandenburg (1.8%). All these serovars were also among the ten most common serovars reported on pig meat in the zoonoses 2007 reports (Table SA15) and overall the serovar distribution reported from the baseline survey appears quite similar to the one reported by MSs for this report.

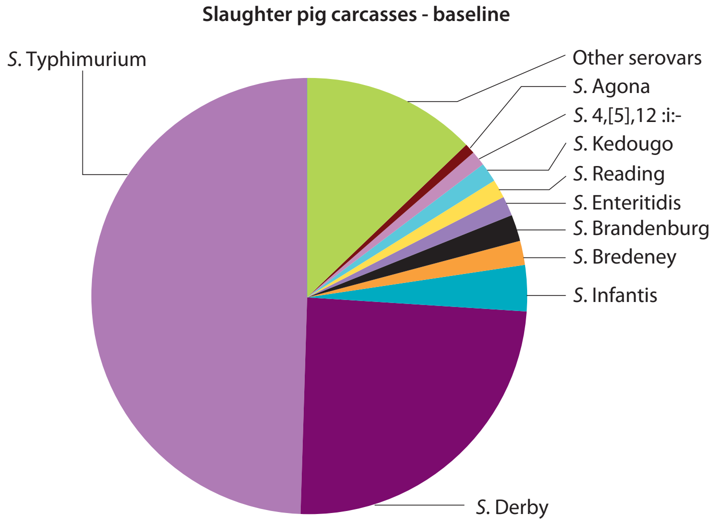
Table SA16. | ***Distribution of the ten most common* Salmonella *serovars on slaughter pig carcasses, baseline survey 2006-2007***

Countries	No. of isolates serotyped	S. Typhimurium	S. Derby	S. Infantis	S. Bredeney	S. Brandenburg	S. Reading	S. Enteritidis	S. Kedougou	S. 4,[5],12:i:-	S. Agona	Other serovars and non-typeable
		% positive										
Total no. of isolates	**386**	**191**	**94**	**13**	**8**	**7**	**6**	**5**	**5**	**4**	**4**	**49**
Austria	7	42.9	42.9					14.3				
Belgium	73	63.0	20.5	1.4		1.4						13.7
Cypres	9	22.2						11.1	11.1			55.6
Czech Republic	19	42.1	21.1	5.3				15.8			10.5	5.3
Denmark	10	50.0	20.0	20.0								10.0
France	78	43.6	35.9	6.4	3.8	2.6					1.3	6.4
Ireland	71	56.3	18.3	5.6	2.8							16.9
Lithuania	8	37.5	25.0		25.0						12.5	
Latvia	8		25.0		12.5	50.0						12.5
Poland	7	42.9	42.9									14.3
Sweden	0											
Slovenia	0											
United Kingdom	97	48.5	22.7				6.2		4.1	5.2		13.4
Proportion of serotyped isolates		**49.5**	**24.4**	**3.4**	**2.1**	**1.8**	**1.6**	**1.3**	**1.3**	**1.3**	**1.0**	**12.7**

Note: Data are only presented for sample size ≥10. The serovar distribution (% isolates) was based on the number of serotyped isolates, including non-typeable isolates. Ranking was based on the sum of all reported serovars

Figure SA10. ***Distribution of Salmonella serovars in pig meat in the Zoonoses report data 2007 (Table SA15) and in the baseline survey on slaughter pigs 2006-2007 (Table SA16) in the EU***





Bovine meat and products thereof

Many of the monitoring programmes on bovine meat and products thereof are based on sampling at the slaughterhouse and meat cutting plants. At the slaughterhouse, sampling is carried out as swabbing of the carcasses or collection of meat samples and testing of 25 gram samples. At processing and retail most MSs analyse 25 gram meat samples. The MS monitoring programmes for *Salmonella* in bovine meat are described in Appendix Table SA17.

The occurrence of *Salmonella* in fresh bovine meat at different stages of the production chain during the period 2004 to 2007 is presented in Table SA17. On average, the proportion of *Salmonella* positive units was 0.3% in 2007, which is very similar to reported levels in 2004 to 2006.

Data from slaughterhouses were based on swab samples in six of the ten reporting MSs. In 2007, the proportion of positive samples from slaughterhouses was very low (<1.0%) in most reporting countries (Table SA17). This is similar to the observations in 2006. Estonia and Spain were the only MSs reporting higher levels, 1.8% and 6.7% of positive samples, respectively. At cutting plants and retail the proportion of positive samples varied between 0% and 2.2%, and Spain reported the highest contamination level.

Table SA17. **Salmonella *in fresh bovine meat at slaughter, cutting/processing level and retail, 2004-2007***

Country	Sample unit	Sample size	2007		2006		2005		2004	
			N	% Pos	N	% Pos	N	% Pos	N	% Pos
At slaughterhouse										
Belgium	Single	1,600 cm^2	-	-	69	0	-	-	-	-
Czech Republic	Batch[1,2]	100/400 cm^2	4,856	0.3	3,466	0.2	2,445	1.9	1,328	2.0
Denmark[3]	Single[1]	300 cm^2	7,350	0.3	8,155	0.2	9,550	0.6	10,695	0.5
Estonia	Single[1]	1,400 cm^2	334	1.8	320	0.3	388	0	371	0
	Single[1]	25g	91	0	226	0	343	0.6	310	4.0
Finland	Swab	1,400 cm^2	3,133	0	3,237	0.1	3,218	0	3,251	0
Germany	Single	10g	8,119	0.7	-	-	-	-	4,435	0.7
Hungary	Single	25g	144	0.7	-	-	-	-	-	-
Latvia	Single[1]	-	3,000	0.1	-	-	-	-	-	-
Spain	Single	25g	60	6.7	67	7.5	64	6.3	71	9.9
Sweden	Single[1]	1,400 cm^2	3,782	<0.1	3,510	<0.1	3,297	<0.1	3,475	0
Norway	Single[1]	1,400 cm^2	2,096	<0.1	2,035	0	2,076	0	2,136	0
At processing/cutting plants										
Estonia	Single	25g	177	0.6	78	0	85	0	60	0
Finland	Single	25g	2062	0	2,261	0	2,370	0	2,485	<0.1
Germany	Single	25g	97	0	-	-	-	-	-	-
Ireland	Single	25g/various	22,971	0.1	21,618	0.2	21,168	0.2	13,364	0.2
Slovenia	Single[1]	300 cm^2	-	-	44	0	-	-	-	-
	Single	25g	160	0	155	0	107	0	-	-
Spain	Single	25g	155	1.9	99	3.0	47	0	28	7.1
At retail										
Belgium	-	-	-	-	110	0	171	0.6	98	0
Germany	Single	25g	489	0	-	-	-	-	363	0.8
Luxembourg	Single	25g	27	0	-	-	-	-	-	-
Netherlands	Single	25g	401	0.2	873	1.5	770	1.4	956	1.0
Slovenia	Single	25g	385	0.5	-	-	-	-	-	-
Spain	Single	25g	90	2.2	153	0.7	137	2.9	-	-

Table SA17. | **Salmonella *in fresh bovine meat at slaughter, cutting/processing level and retail, 2004-2007 (contd.)***

Country	Sample unit	Sample size	2007		2006		2005		2004	
			N	% Pos	N	% Pos	N	% Pos	N	% Pos
Sampling level not stated										
Austria	Single	25g	-	-	-	-	98	1.0	-	-
Cyprus	Batch	25g	-	-	-	-	60	6.7	-	-
Estonia	Single	25g	-	-	115	0	-	-	-	-
Germany[4]	Single	25g	-	-	638	0.3	1,831	3.2	-	-
Hungary	Single	25g	-	-	202	2.0	-	-	-	-
Italy	Batch	25g	105	0	-	-	-	-	-	-
	Single	25g	1,543	1.0	2,254	0.4	2,010	2.6	701	0.4
Luxembourg	Single	25g	-	-	98	1.0	-	-	-	-
Netherlands	Single	25g	-	-	-	-	356	2.2	-	-
Poland	Batch	10g, 25g, 100g	3,002	0.5	1,731	1.1	1,153	2.6	-	-
Portugal	Single	-	-	-	1,142	0	0	16.7	-	-
Slovakia	Single	10g, 25g	1,639	0	236	0	247	0	-	-
EU Total			**64,172**	**0.3**	**50,857**	**0.3**	**49,945**	**0.7**	**41,991**	**0.4**

Note: Data are only presented for sample size ≥25

1. Carcasses
2. The 2007 data also include pool of four samples of the muscle tissue (5 cm2 each, maximum thickness of 5 mm)
3. In Denmark, the majority of samples are tested as pools of 5 carcass swabs. At small slaughterhouses, carcass samples are tested individually. Prevalence of Salmonella in single swab samples is estimated from results of pooled analysis
4. Data from 2005 and 2006 are reported totals from all sampling levels

Data of *Salmonella* findings in minced meat, meat preparations and meat products of bovine meat origin, non-ready-to-eat (non-RTE) and ready-to-eat products, are summarised in Tables SA18a and b. The proportion of positive units were overall at the same level for RTE and non-RTE products (0.2%), and the range of positive units in these investigations varied from 0.2% to 4.0% in non-RTE products and from 0.2 % to 2.3% in RTE products. The highest proportion of positive samples in RTE meats were reported from minced meat intended to be eaten raw.

Table SA18a. | ***Salmonella** in non-ready-to-eat minced meat, meat preparations and meat products from bovine meat, 2007*

Country	Description	Sample unit	Sample size	N	% Pos
At processing plant					
Czech Republic	Meat preparation	Batch	25g	1,470	0.2
	Meat product	Batch	25g	86	0
	Minced meat	Batch	25g	33	0
Ireland	Meat product	Single	25g	12,255	<0.1
Poland	Meat preparation	Batch	-	1,334	0.7
	Meat product	Batch	-	199	1.0
Romania[1]	Meat preparation	Single	25g	1,107	0.1
	Meat product	Single	25g	227	0
	Minced meat	Single	25g	971	0
At retail					
Austria	Minced meat	Single	10g	53	1.9
Germany	Meat product	Single	25g	46	0
	Minced meat	Single	25g	72	0
Greece	Meat preparation	Single	25g	30	0
Hungary	Meat product	Single	25g	298	3.0
	Minced meat	Batch	10g	97	1.0
Ireland	Minced meat	Single	25g	38	0
Netherlands	Meat preparation	Single	25g	25	4.0
	Minced meat	Single	25g	266	0.4
Portugal	Minced meat	Batch	10g	135	2.2
Sampling level not stated					
Italy	Meat preparation	Single	25g	294	1.0
	Minced meat	Batch	25g	260	2.3
	Minced meat	Single	25g	1,000	0.6
Poland	Minced meat	Batch	-	1,693	0
Total (11 MSs)				**21,989**	**0.2**

Note: Data are only presented for sample size ≥25

1. Includes from processing, retail and own check

Table SA18b. | ***Salmonella* in ready-to-eat minced meat, meat preparations and meat products from bovine meat, 2007**

Country	Description	Sample unit	Sample size	N	% Pos
At processing plant					
Czech Republic	Meat product	Batch	25g	641	0
Germany	Minced meat	Single	25g	63	1.6
Ireland	Meat product	Single	25g	1,513	0.2
Poland	Meat preparation	Batch	-	117	0
	Meat product	Batch	-	365	0
Romania[1]	Meat product	Single	25g	5,528	0
At retail					
Belgium	Minced meat	Single	25g	128	1.6
	Meat preparation	Single	25g	132	2.3
Germany	Meat product	Single	25g	114	0.9
	Minced meat	Single	25g	539	0.7
Ireland	Meat product	Single	25 g	329	0
Luxembourg	Minced meat	Single	25 g	112	0
Netherlands	Minced meat	Single	25 g	952	0.4
Slovenia	Meat preparation	Single	25 g	50	0
Sampling level not stated					
Italy	Minced meat	Single	25g	80	0
Poland	Minced meat	Batch		410	0
Total (10 MSs)				**11,073**	**0.2**

Note: Data are only presented for sample size ≥25

1. Includes from processing, retail and own check

Five MSs reported specific information on *Salmonella* serovars in bovine meat in 2007. As in previous years, *S.* Typhimurium and *S.* Dublin were the most frequently detected serovars from bovine meat followed by *S.* Enteritidis and *S.* Derby (Table SA19).

Table SA19. | ***Distribution of the ten most common* Salmonella *serovars in bovine meat, 2007***

		% positive										
Countries	**No. of isolates serotyped**	**S. Typhimurium**	**S. Dublin**	**S. Enteritidis**	**S. Derby**	**S. Infantis**	**S. Rissen**	**S. 1,4,5,12:i:-**	**S. Bredeney**	**S. Kentucky**	**S. London**	**Other serovars, non-typeable, and unspecified**
Total, No. of isolates	**141**	**37**	**29**	**9**	**8**	**1**	**4**	**3**	**3**	**3**	**3**	**41**
Czech Republic	18	38.9	-	22.2	-	-	-	-	-	-	16.7	22.2
Denmark	22	9.1	68.2	-	-	-	-	-	-	-	-	22.7
Ireland	35	34.3	20.0	2.9	8.6	-	5.7	-	-	8.6	-	20.0
Italy	55	27.3	-	5.5	9.1	1.8	3.6	5.5	5.5	-	-	41.8
Netherlands	11	9.1	63.6	9.1	-	-	-	-	-	-	-	18.2
Proportion of serotyped isolates		**26.2**	**20.6**	**6.4**	**5.7**	**0.7**	**2.8**	**2.1**	**2.1**	**2.1**	**2.1**	**29.1**

Note: Data are only presented for sample size ≥10. The serovar distribution (% isolates) was based on the number of serotyped isolates, including non-typeable isolates. Ranking was based on the sum of all reported serovars

Milk and dairy products

As in previous years, very few *Salmonella* findings were reported from cow's milk in 2007. Data from investigations of raw milk intended for direct human consumption were reported by five MSs when only including MSs with a sample size ≥25: the Czech Republic (37 batches), Germany (208 single samples), Italy (433 batches and 201 single samples), Poland (165 batches) and Romania (25 single samples). *Salmonella* was only detected in Italy from 0.7% of the samples tested. Six MSs reported data from investigations of pasteurised milk (only including MSs with a sample size ≥25): Austria (37 single samples), Germany (983 single samples), Poland (414 batches), Romania (265 single samples) and Slovakia (32 batches). None of these units were found positive.

A large number of different dairy products were also investigated by MSs. Seven MSs reported no *Salmonella* findings in butter and four MSs reported no findings in cream. Among 14 reporting MSs, only Italy found positive samples (2.8%) in ice-cream and among eight MSs only Estonia (5.0%) and Poland (<0.1%) reported *Salmonella* in milk and whey powder (only including MSs with a sample size ≥25, except for the positive findings in 20 samples of milk powder from Estonia).

Salmonella investigations of cheeses made from pasteurised, raw or low heat-treated milk, from cow's, goat's and sheep's milk are summarised in Table SA20. The number of MSs and number of investigated samples varied considerably depending on product type, and the vast majority of investigations were negative. In 2007, *Salmonella* was not detected in the two investigations of hard cheeses. In semi-soft cheeses the only positive samples were reported by Italy in cheeses made from raw cow's and sheep's milk. In unspecified cheeses, the only *Salmonella* positive samples were reported from Ireland (1.7%, raw milk, unspecified), Italy (1.5%, unspecified sheep's milk) and Spain (1.0%, unspecified milk).

For additional information on *Salmonella* in milk and dairy products refer to Level 3 tables.

Table SA20. | **Salmonella** ***in soft and semi-soft cheeses, 2007***

Country	Description	Sample unit	Sample size	N	% Pos
Cheeses made of pasteurised milk from cows					
Austria	Soft and semi-soft, at processing	Single	25g	204	0
	Soft and semi-soft, at retail	Single	25g	187	0
Belgium	Soft and semi-soft, at retail	Single	25g	122	0
Czech Republic	Soft and semi-soft, at retail	Batch	25g	34	0
	Soft and semi-soft, at processing	Batch	25g	522	0
Germany	Soft and semi-soft, at processing	Single	25g	57	0
	Soft and semi-soft, at retail	Single	25g	295	0
Italy	Soft and semi-soft	Batch	25g	228	0
	Soft and semi-soft	Single	25g	102	0
Netherlands	Soft and semi-soft, at retail	Single	25g	27	0
Poland	Soft and semi-soft, at processing	Batch	varies	1,544	0
Romania	Soft and semi-soft, at processing	Single	25g	1,406	0
Slovakia	Soft and semi-soft	Batch	25g	188	0
Switzerland	Soft and semi-soft, at processing	Single	25g	48	0
Cheeses made of raw or low heat treated milk from cows					
Austria	Soft and semi-soft, at processing	Single	25g	109	0
	Soft and semi-soft, at retail	Single	25g	51	0
Belgium	Soft and semi-soft, at retail	Single	25g	81	0
Czech Republic	Soft and semi-soft, at processing	Batch	25g	47	0
Germany	Soft and semi-soft, at processing	Single	25g	41	0
	Soft and semi-soft, at retail	Single	25g	80	0
Italy	Soft and semi-soft	Batch	25g	459	0.2
	Soft and semi-soft	Single	25g	239	0.4
Poland	Soft and semi-soft, at processing	Batch	25g	110	0
Romania	Soft and semi-soft, at processing	Single	25g	469	0
Cheeses made of pasteurised milk from sheep					
Italy	Soft and semi-soft	Single	25g	40	0
Romania	Soft and semi-soft, at processing	Single	25g	220	0
Cheeses made of raw or low heat treated milk from sheep					
Italy	Soft and semi-soft	Single	25g	244	0.4
Romania	Soft and semi-soft, at processing	Single	25g	520	0
Slovakia	Soft and semi-soft	Batch	25g	854	0
Cheeses made of pasteurised milk from goats					
Czech Republic	Soft and semi-soft, at processing	Batch	25g	25	0
Romania	Soft and semi-soft, at processing	Single	25g	457	0
Cheeses made of raw or low heat treated milk from goats					
Italy	Soft and semi-soft	Single	25g	33	0
EU Total				**8,995**	**<0.1**

Note: Data are only presented for sample size ≥25

Vegetables, fruit and herbs

An increased number of countries reported data on investigations of different kinds of plant products: fruit, vegetables and herbs. This may reflect the attention given to this area following several international *Salmonella* outbreaks where plant products have been implicated as vehicles e.g. lettuce, tomatoes and basil. In particular, Germany, Ireland, the Netherlands and the United Kingdom carried out large investigations. In Table SA21, results from investigations of more than 25 samples are summarised. *Salmonella* was detected in very few MSs and generally at very low levels.

In fruit and vegetables, *Salmonella* was detected by five MSs, mainly from pre-cut RTE products, and positive findings ranged from 0.1% to 2.3%. Interestingly, Sweden reported the highest proportion of positive samples from investigations using risk based sampling. MS specific results are illustrated in Figure SA11.

In 2007, five MSs investigated sprouts: in Germany and the Netherlands, *Salmonella* was detected in relatively high proportions in RTE sprouts (2.2% and 1.5% of the samples, respectively). In herbs and spices, *Salmonella* was detected in 0.4% to 0.5% of samples in three of the five investigations (Table SA21). These are at a lower level than in the years 2005 to 2006, when positive proportions up to 7.3% and 14.8% were reported in herbs and spices by MSs. In the United Kingdom, 0.5% of the tested samples of dried seed from retail were positive for *Salmonella* (n=3,760).

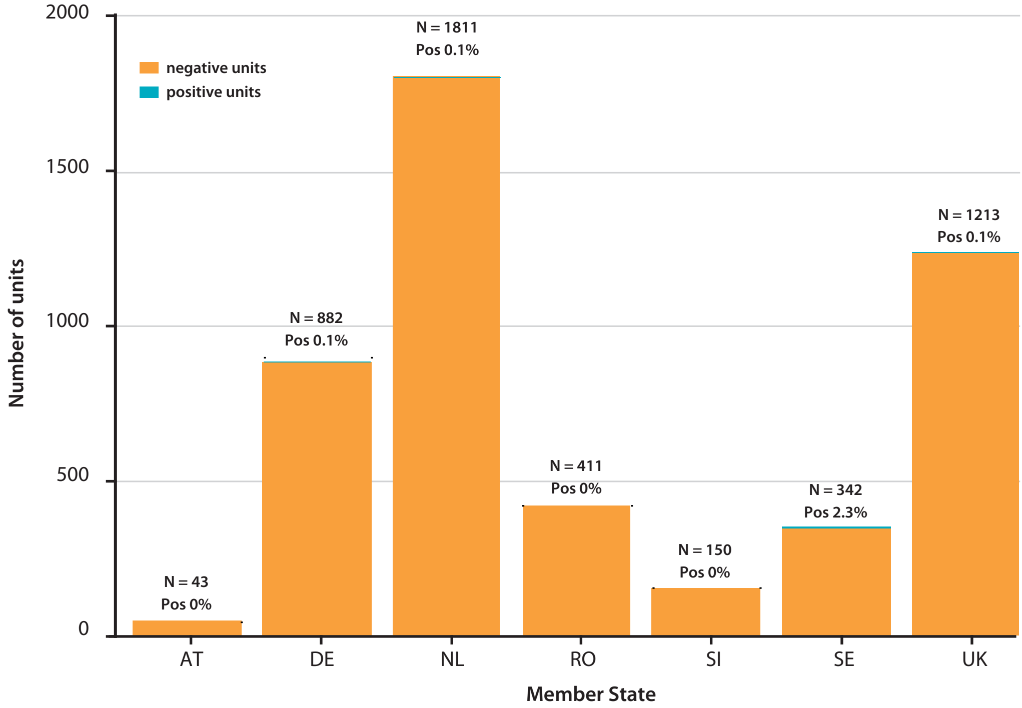
Table SA21. | **Salmonella *in vegetables, fruit and herbs*[1]*, 2007***

Country	Description	Sample unit	Sample size	N	% Pos
Vegetables					
Spain	-	Single	25g	212	0
Sprouts					
Germany	RTE	Single	-	135	2.2
Hungary	RTE	Batch	25g	101	0
Netherlands	RTE	Single	25g	581	1.5
Poland	-	Batch	-	65	0
	RTE	Batch	-	84	0.
Portugal	Non-RTE	Single	25g	26	0
Fruit					
Austria	Pre-cut, RTE	Single	25g	43	0
Fruit and vegetables					
Germany	Pre-cut	Single	25g	882	0.1
Hungary	Pre-cut	Batch	25g	161	0
Ireland	At processing plants	Single	25g	3,477	<0.1
	At retail	Single	25g	263	0.4
Netherlands	Pre-cut, RTE	Single	25g	1,811	0.1
Poland	Pre-cut, RTE	Batch	-	81	0
Portugal	Pre-cut, RTE	Batch	25g	175	0
Romania	Pre-cut	Single	25g	180	0
	Pre-cut, RTE	Single	25g	231	0
Slovakia	Pre-cut, RTE	Batch	25g	100	0
	Products	Batch	25g	47	0
Slovenia	Pre-cut, RTE	Single	25g	150	0
Sweden	Pre-cut, RTE	Single	25g	342	2.3
United Kingdom	Pre-cut, RTE	Single	100g	1,213	0.1
Nuts and nut products					
Austria	At retail	Single	25g	38	0
Herbs and spices					
Austria	At retail	Single	25g	90	0
Hungary	Dried	Batch	25g	267	0.4
Ireland	-	Single	25g	42	0
Netherlands	-	Single	25g	978	0.5
United Kingdom	Fresh	Single	100g	3,760	0.5
EU Total				**15,535**	**0.3**

Note: Data are only presented for sample size ≥25

1. Place of sampling is at retail or not specified if not otherwise stated

Figure SA11. **Salmonella *in pre-cut fruit and vegetables (RTE) in reporting MSs, single samples, 2007***



Note: N is the total number of tested units

Fish, fishery products, crustaceans, live bivalve molluscs and molluscan shellfish

Thirteen MSs and one non-MS reported investigations (sample size ≥ 25) of *Salmonella* in fish and fishery products. Several MSs (Belgium, Germany, Hungary, Italy and Spain) reported positive samples although generally at very low levels, and overall 0.2% of the tested samples was contaminated. Hungary reported the highest proportion of positive samples from two investigations (N=193, 2.1%).

Also thirteen MSs and Norway reported investigations (sample size ≥25) of *Salmonella* in crustaceans, live bivalve molluscs and molluscan shellfish. Germany, Italy and the Netherlands recorded a few positive findings in crustaceans, and Belgium, Italy, Spain and Norway reported a few *Salmonella* positive findings in live bivalve molluscs and molluscan shellfish. Overall, 0.4% of the tested units of crustaceans, 0.8% of the tested units of live bivalve molluscs and 1.5% of the tested units of molluscan shellfish were *Salmonella* positive.

Other foodstuffs

In 2007, only a few findings of *Salmonella* were reported from other foodstuffs in investigations of 25 samples or more. Positive findings were also reported from bakery products (Spain: two positive of 1,590 samples), cereals (Hungary: one positive of 357 units) and Hungary reported a few positive meat samples from wild boar and game (three positive of 117 samples). Several MSs also reported findings of *Salmonella* in other processed food products and prepared dishes.

For detailed information please refer to Level 3 tables.

Compliance with microbiological criteria

The *Salmonella* criteria laid down by Regulation (EC) No 2073/2005 have applied from 1 January 2006. The Regulation prescribes rules for sampling and testing, and sets limits for the presence of *Salmonella* in specific food categories. The food safety *Salmonella* criteria apply for products placed on the market during their shelf-life. Table SA22 summarises the reported findings related to the food categories included in the Regulation for food safety criterion. This information derives mainly from official controls since HACCP and own check data is omitted due to difficulties in interpretation of the data.

Table SA22. ***Compliance with the food safety* Salmonella *criteria laid down by Regulation (EC) No 2073/2005, 2007*[1]**

Food categories	Total single samples			Total batches		
	Sample size	N	% non compliant	Sample size	N	% non compliant
1.4 Minced meat and meat preparations to be eaten raw	25g	4,052	1.5	10g or 25g or not stated	1,551	1.2
1.5. Minced meat and meat preparations from poultry to be eaten cooked	10g or 25g	2,867	4.8	10g or 25g	4,314	12.8
1.6. Minced meat and meat preparations from other species than poultry to be eaten cooked	10g or 25g	16,517	1.8	10g, 25g or not stated	28,789	0.4
1.7. Mechanically separated meat	10g or 25g	1,113	2.8	10g, 25g or not stated	252	3.2
1.8. Meat products intended to be eaten raw	25g	2,736	3.7	25g	44	4.5
1.9. Meat products from poultry meat intended to be eaten cooked	10g or 25g	10,059	0.7	10g or 25g	5,453	3.8
1.10. Gelatine and collagen	25g	84	0	25g or not stated	215	0
1.11. Cheeses, butter and cream made from raw or low heat-treated milk	25g or not stated	3,095	0.1	25g or not stated	2,369	0.1
1.12. Milk- and whey powder	25g or not stated	6,556	0	25g or not stated	6,466	0
1.13. Ice-cream	25g or not stated	11	0	25g or not stated	1,124	0.4
1.14. Egg products	25g	2,155	0.4	25g or 25ml	6,453	0.1
1.15. RTE foods containing raw egg	25g	21	0	25g	134	0
1.16. Cooked crustaceans and molluscan shellfish	25g	167	0.6	25g	249	0
1.17. Live bivalve molluscs and live echinoderms, tunicates and gastropods	25g	1,009	0.6	25g	3,214	0.9
1.18. Sprouted seeds (RTE)	25g or not stated	726	1.7	25g or not stated	202	0
1.19. Pre-cut fruit and vegetables (RTE)	25g or not stated	5,211	0.2	25g or not stated	151	0
1.20. Unpasteurised fruit, vegetables and juices (RTE)	25g	369	0	25g	22	0
1.22. Dried infant formulae and dried dietary foods for medical purposes[2]	25g	994	0	25g or not stated	80	0

1. Including also sample units <25. Excluding data from clinical investigation, monitoring by industry, HACPP and own checks (except data from checks reported by Romania). RTE: ready to eat products
2. Intended for infants under six months of age

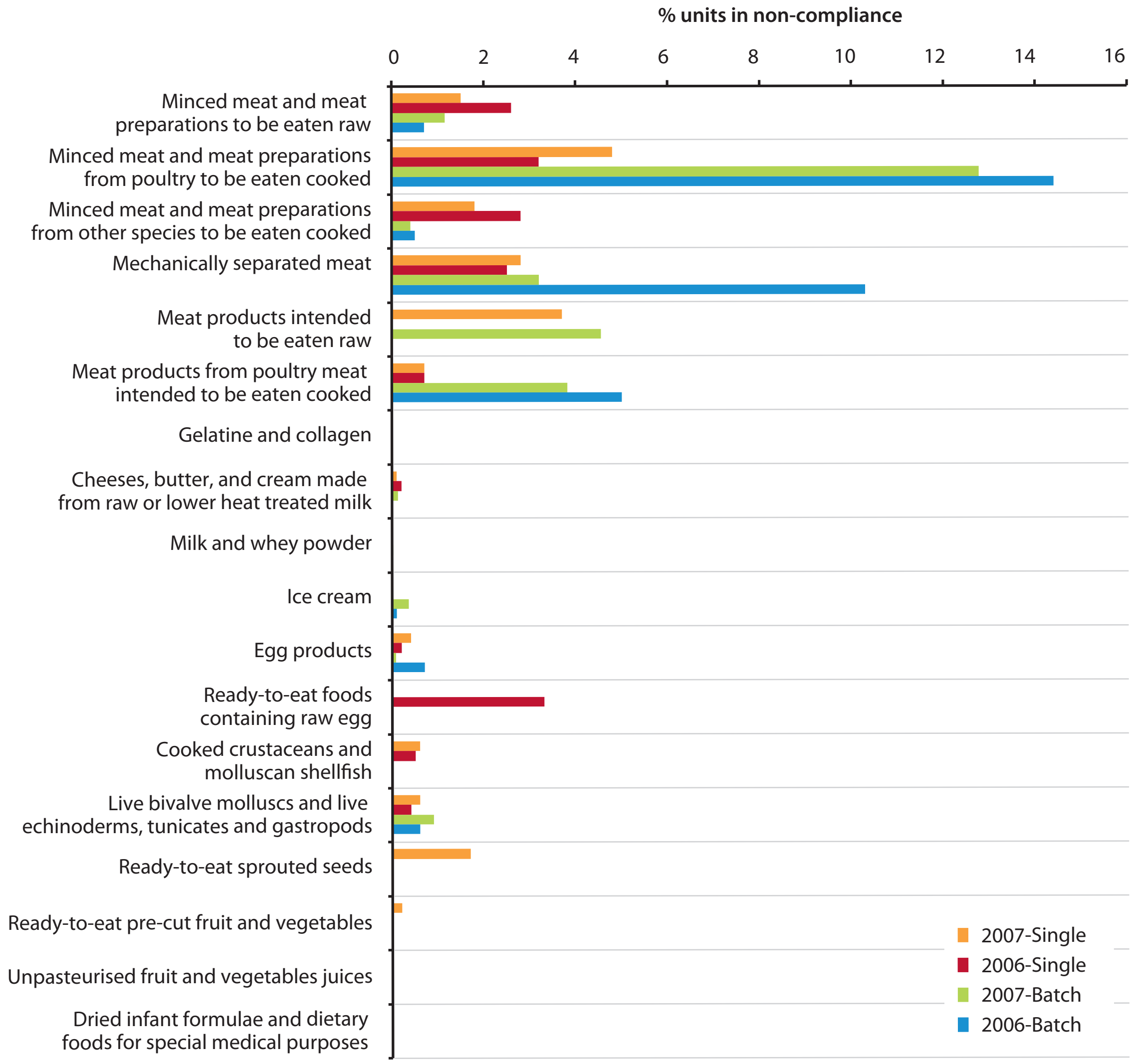
According to Community criteria, *Salmonella* must be absent in samples of:

- minced meat, meat products and meat preparations intended to be eaten raw (in 25g) or cooked (in 10g)
- minced meat, meat products and meat preparations from poultry meat intended to be eaten cooked (in 10g)
- mechanically separated meat (in 10g)
- gelatine and collagen (in 25g)
- cheeses, butter and cream made from raw or low-heat-treated milk, as well as milk and whey powder (in 25g)
- ice-cream (in 25g)
- egg products and ready-to-eat foods containing raw egg (in 25g or 25ml)
- live and cooked crustaceans, live bivalve molluscs and molluscan shellfish (in 25g)
- ready-to-eat pre-cut or unpasteurised fruit and vegetables, as well as juice (in 25g)
- dried infant formulae and dried dietary foods for medical purposes (in 25g)

As in 2006, the highest levels of non-compliance with *Salmonella* criteria occurred in products of meat origin containing raw meat, and generally in products of poultry meat origin (Figure SA12). Minced meat and meat preparations from poultry, intended to be eaten cooked (4.8% and 12.8% for single samples and batches, respectively) and mechanically separated meat (2.8% and 3.2%, respectively) had the highest levels of non-compliance. A particular risk for human health is the *Salmonella* findings from meat categories intended to be eaten raw (food categories 1.4 and 1.8 in Table SA22), out of which 1.3% of the batches and 2.4% of the single samples contained *Salmonella*. In the other food categories, the level of non-compliance was very low, and only samples of RTE sprouted seed exceeded 1% non-compliance. In general, the level of non-compliance in 2007 was comparable to the findings in 2006 (Figure SA12).

MSs did not always use the sample sizes (e.g. 10g or 25g) indicated in Regulation (EC) No 2073/2005 for testing which partly hampered analyses of the data.

Figure SA12. | ***Proportion of samples*[1] *in non-compliance with EU* Salmonella *criteria, 2007***



1. Based on single and batch data. Excluding HACCP and own check samples

3.1.3 | *Salmonella* in animals

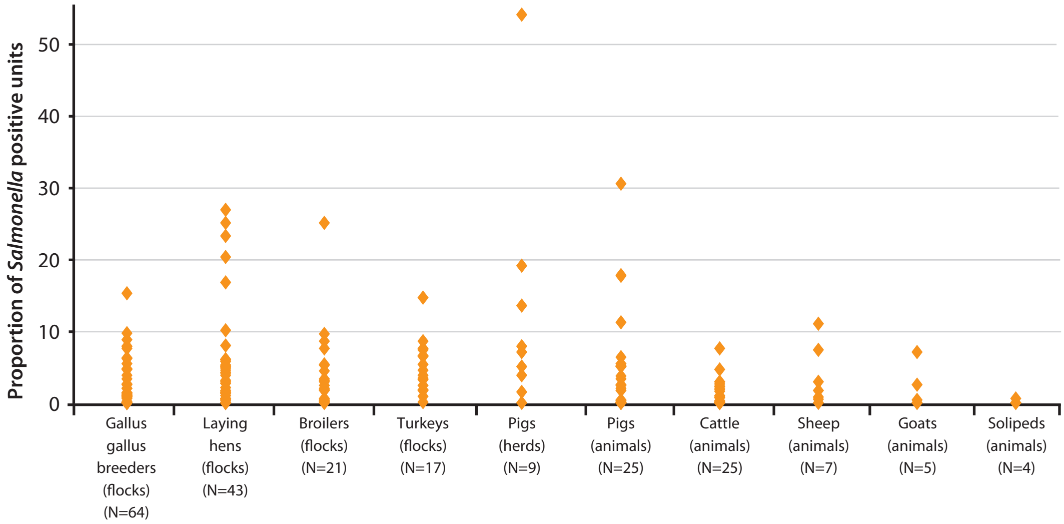
Many MSs have *Salmonella* control or surveillance programmes in place for a number of farm animal species, see Appendix 2 for further descriptions. An overview of the countries that reported data on *Salmonella* in animals for 2007 is presented in Table SA23.

Table SA23. | ***Overview of countries reporting data for* Salmonella *in animals, 2007***

Data	Total number of MSs reporting	Countries
Gallus gallus (no further sampling level)	5	**MSs:** EE, HU, IT, PT, UK **Non-MS:** NO
Breeders	23	**MSs:** AT, BE, BG, CZ, DK, EE, FI, FR, DE, GR, HU, IE, IT, LV, PL, PT, RO, SK, SI, ES, SE, NL, UK **Non-MSs:** NO, CH
Laying hens	22	**MSs:** AT, BE, BG, CZ, DK, EE, FI, FR, DE, GR, IE, IT, LV, LU, PL, PT, SK, SI, ES, SE, NL, UK **Non-MSs:** NO, CH
Broilers	18	**MSs:** AT, BE, BG, DK, EE, FI, DE, GR, IT, LV, PL, PT, SK, SI, ES, SE, NL, UK **Non-MSs:** NO, CH
Turkeys	17	**MSs:** AT, BE, BG, FI, DE, GR, HU, IE, IT, PL, PT, SK, SI, ES, SE, NL, UK **Non-MS:** NO
Ducks	15	**MSs:** AT, BE, BG, DE, GR, HU, IE, IT, LV, PL, PT, SK, SE, NL, UK **Non-MS:** NO
Geese	10	**MSs:** AT, DE, GR, HU, IT, LV, PL, SK, SE, UK
Other poultry	17	**MSs:** AT, BE, BG, CZ, EE, DE, GR, HU, IE, IT, LV, PL, PT, SK, SE, NL, UK **Non-MS:** NO
Pigs	22	**MSs:** AT, BE, BG, CZ, DK, EE, FI, DE, GR, IE, IT, LV, LU, PL, PT, RO, SK, SI, ES, SE, NL, UK **Non-MS:** NO
Cattle	22	**MSs:** AT, BE, BG, CZ, EE, FI, DE, GR, HU, IE, IT, LV, LU, PL, PT, RO, SK, SI, ES, SE, NL, UK **Non-MS:** NO
Other animal species	22	**MSs:** AT, BG, CZ, DK, EE, FR, DE, GR, HU, IE, IT, LV, LU, PL, PT, RO, SK, SI, ES, SE, NL, UK **Non-MS:** NO

In Figure SA13 an overview of *Salmonella* prevalence in different animal populations reported by MSs is provided. In total, 220 investigations with more than 25 samples were included in this analysis. More than half of the tested units were from flocks of *Gallus gallus* including breeding, laying hens and broiler flocks. Overall more than 90% of the reported investigations had a *Salmonella* prevalence below 10%. However, for pigs and poultry a higher prevalence was reported by some MSs. *Salmonella* was rarely detected from cattle, goats and solipeds.

Figure SA13. | ***Reported* Salmonella *prevalence by animal species within the EU, 2007*[1]**



Note: Data are only presented for sample size ≥25. Results from HACCP and baseline surveys are excluded as well as date based on suspicion or trace-back sampling

1. Each point represents a MSs investigation

Breeding flocks of *Gallus gallus* and flocks of laying hens and broilers

2007 was the first year when MSs were obliged to implement the new *Salmonella* control programmes in breeding flocks of *Gallus gallus* in accordance with Regulation (EC) No 2160/2003. These control programmes aim to meet the *Salmonella* reduction target set by Regulation (EC) No 1003/2005 and covers the following serovars: *S.* Enteritidis, *S.* Typhimurium, *S.* Infantis, *S.* Virchow and *S.* Hadar. The target is set for adult (= production period) breeding flocks comprising at least 250 birds and MSs must meet the target by end 2009. The minimum requirements of the control programme are laid down in the Regulation and include sampling three times during the rearing period and every two weeks during the production period. Therefore, flocks can be found positive at different stages and ages, e.g. as day-old chicks, at the end of the rearing period (before movement to production) or during the production period (i.e. the laying period). Sampling required by the Regulation is more intensive than the requirements set out in the former Directive 92/117/EC that obliged MSs to run control programmes in breeding flocks for *S.* Enteritidis and *S.* Typhimurium, only. Therefore, the new control programmes are likely to be more sensitive and reveal more *Salmonella* positive flocks. For more detailed information see Appendix Table SA2.

In 2007, control programmes approved by the Commission were implemented in 24 MSs and Norway; Romania and Bulgaria have approved programmes starting in 2008. In total, 20 MSs and Norway reported data within the framework of the programme. The following results from the sampling of breeding flocks, including both meat and egg-production lines were reported at flock level. A flock is reported positive if one or more of the samples have been found positive.

The prevalence of *Salmonella* spp. and the five serovars (*S.* Enteritidis, *S.* Typhimurium, *S.* Infantis, *S.* Virchow, *S.* Hadar) targeted in the control programmes in *Gallus gallus* breeding flocks during the production period in 2007 is presented in Table SA24 and Figures SA14 and SA15. Overall, 2.9% of breeding flocks in the EU were positive at some stage during the production period. Eight MSs (Austria, Bulgaria, Estonia, Finland, Ireland, Latvia, Lithuania and Slovenia); Norway and Switzerland did not detect the five targeted serovars in their breeding flocks. Additionally, France, Germany, Hungary, the Netherlands, Slovakia, Sweden and the United Kingdom reported 1% or less of the production flocks positive, thus the prevalence of the five target serovars in 15 MSs and Norway was already lower than the reduction target limit of 1%.

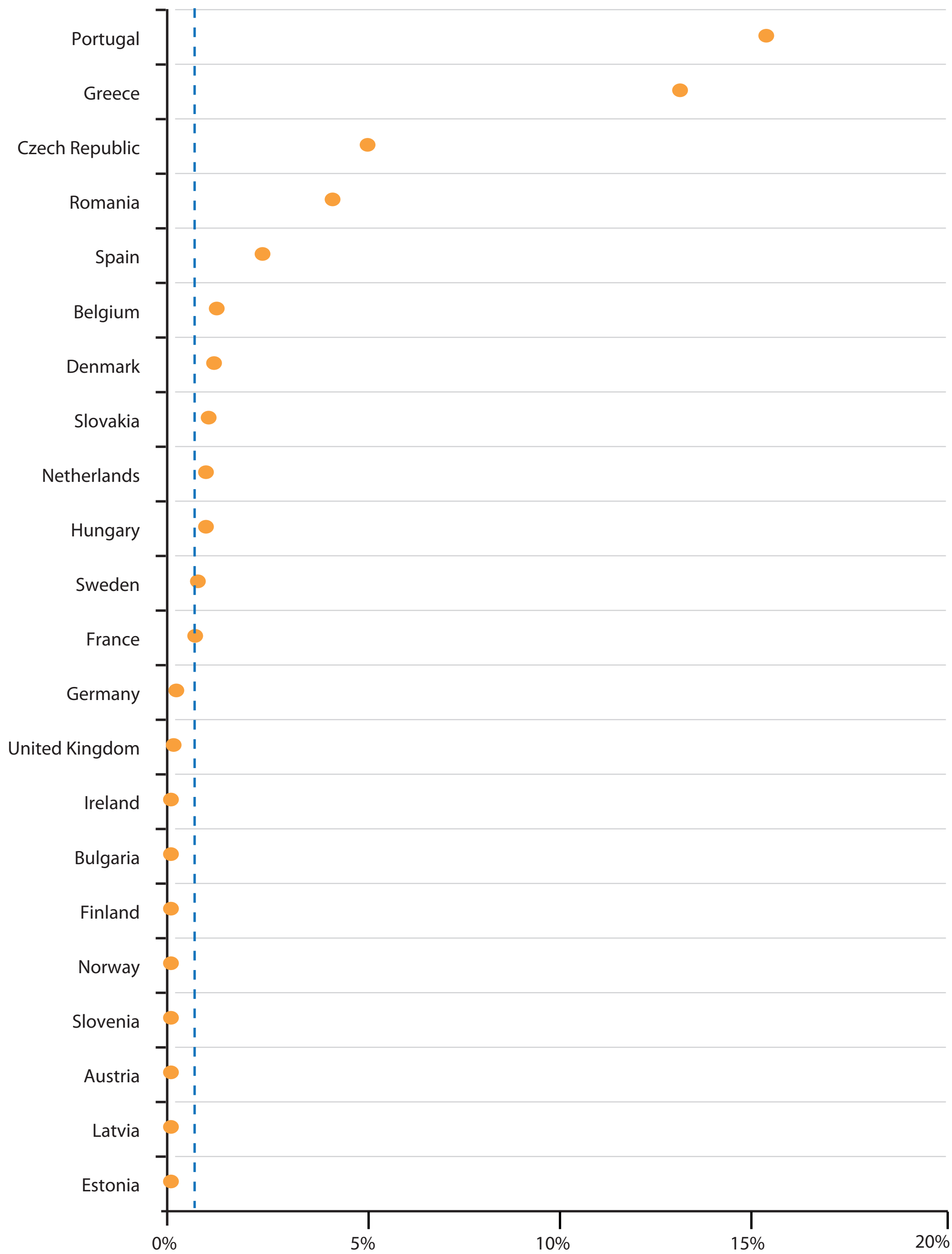
Eleven MSs reported a prevalence of over 1% of the five targeted serovars; in particular Greece and Portugal reported high prevalence of 13.2% and 15.4%, respectively. Cyprus, the Czech Republic and Romania reported 5.3%, 5.1% and 4.2%, respectively, of positive flocks with the targeted serovars. The target has to be met by MSs by 31 December 2009. Some MSs reported positive breeding flocks with other serovars; Austria and Ireland reported 6.6% and 5.5% positive flocks with serovars other than the targeted ones, respectively. A total of twelve MSs and Norway reported findings of other serovars, however at low levels.

Table SA24. | **Salmonella** ***in breeding flocks of*** **Gallus gallus** ***(all types of breeding flocks, flock-based data) during production period in countries running control programmes in accordance with Regulation (EC) No 2160/2003***

			Breeding flocks (elite, grandparent and parent)								
				% positive							
Country	Period	Sampling unit	N	% pos (all)	5 target serovars[1]	*S.* Enteritidis	*S.* Typhimurium	*S.* Infantis	*S.* Virchow	*S.* Hadar	Other serovars, non-typeable, and unspecified
Austria	Production	Flock	61	6.6	0	0	0	0	0	0	6.6
Belgium	Production	Flock	498	3.8	1.2	0.2	0.6	0	0.4	0	2.6
Bulgaria	Production	Flock	260	0	0	0	0	0	0	0	0
Czech Republic	Production	Flock	552	7.1	5.1	4.3	0.5	0.2	0	0	2.0
Cyprus			19	26.3	5.3	5.3	0	0	0	0	21.0
Denmark	Production	Flock	270	1.1	1.1	0	1.1	0	0	0	0
Estonia	Production	Flock	3	0	0	0	0	0	0	0	0
Finland	Production	Flock	170	0	0	0	0	0	0	0	0
France	Production	Flock	1,177	0.6	0.6	0.3	0	0.1	0	0.2	0
Germany	Production	Flock	4,155	1.0	0.1	0.1	<0.1	0	0	0	0.8
Greece	Production	Flock	38	13.2	13.2	5.3	0	0	0	7.9	0
Hungary	Production	Flock	2,164	1.2	0.9	0.4	0.1	0.4	0	0	0
Ireland	Production	Flock	489	5.5	0	0	0	0	0	0	5.5
Italy[2]			391	2.3	1.5	0.3	0.3	0	0.3	0.8	0.8
Latvia	Production	Flock	21	0	0	0	0	0	0	0	0
Lithuania			62	3.2	0	0	0	0	0	0	3.2
Netherlands	Production	Flock	1,172	1.3	0.9	0.8	0	0.1	0.1	0	0.3
Poland[3]	Production	Flock	965	3.2	3.2	2.0	0.6	0.3	0.2	0.2	0
Portugal	Production	Flock	117	15.4	15.4	13.7	0	0.9	0.9	0	0
Romania	Production	Flock	24	4.2	4.2	4.2	0	0	0	0	0
Slovakia	Production	Flock	597	1.2	1.0	1.0	0	0	0	0	0.2
Slovenia	Production	Flock	118	0	0	0	0	0	0	0	0
Spain	Production	Flock	855	3.4	2.3	1.4	0.4	0	0.1	0.5	1.2
Sweden	Production	Flock	138	0.7	0.7	0	0.7	0	0	0	0
United Kingdom	Production	Flock	1,633	1.9	0.1	0	0.1	0	0	0	1.8
EU Total			**15,949**	**2.9**	**1.4**	**1.0**	**0.2**	**0.1**	**0.1**	**0.1**	**1.3**
Norway	Production	Flock	149	0.7	0	0	0	0	0	0	0.7
Switzerland[2]			227	0	0	0	0	0	0	0	0

1. *S.* Enteritidis, S.Typhimurium, *S.* Infantis, *S.* Virchow, *S.* Hadar
2. Italy and Switzerland did not specify the type of flocks. For these countries, N may thus not only include the Flocks in Production period but also day-old chicks or Rearing Period Flocks
3. Poland reported only five serotypes with regard to breeding flocks of *Gallus gallus* within the *Salmonella* control programme

Figure SA14. | ***Prevalence[1] of S. Enteritidis, S. Typhimurium, S. Infantis, S. Virchow and S. Hadar in* Gallus gallus *breeding flocks during production period (flock-based data) in the EU and Norway, 2006-2007***



1. MSs with no positive flocks are ordered, from top to bottom, by decreasing number of tested flocks.

The map presented in Figure SA15 shows the estimates of Figure SA14 geographically. In 2007 the prevalence of the five targeted *Salmonella* serovars in production breeding flocks of *Gallus gallus* was higher in some Mediterranean and eastern MSs.

Figure SA15 | ***Prevalence of the five targeted serovars* S. *Enteritidis,* S. *Typhimurium,* S. *Infantis,* S. *Virchow or* S. *Hadar in* Gallus gallus *breeding flocks during the production period, 2007***

Table SA25 shows that almost all elite breeding flocks in the EU are placed in the United Kingdom; but the Czech Republic has a few flocks as well. During the production period no elite flocks tested positive for *Salmonella* in 2007, however the Czech Republic found one flock positive with *S.* Enteritidis in day-old chicks.

The production of grandparent breeding flocks is also concentrated in a limited number of MSs, primarily in France, the Netherlands and the United Kingdom, as well as a few flocks in Belgium, the Czech Republic, Finland, Ireland and Sweden. Generally, the occurrence of *Salmonella* in grandparent flocks was very low. At production stage, the Czech Republic reported two grandparent flocks positive with *S.* Enteritidis and the United Kingdom reported one flock positive for *S.* Mbandaka. In the rearing period the Czech Republic, Finland, France and Norway reported some flocks positive for *Salmonella*, whereas the Netherlands reported two flocks positive without specifying the stage of sampling (Table SA25)

The data on *Salmonella* in parent breeding flocks are reported in the following chapters specifically divided into breeding flocks for egg production line and meat production line.

Table SA25. | **Salmonella *in elite and grandparent breeding flocks* (Gallus gallus, *flock based data) in countries running control programmes in accordance with Regulation (EC) 2160/2003, 2007***

			Elite breeding flocks									Grandparent breeding flocks							
			% positive									% positive							
Country	**Period**	**N**	**% pos (all)**	**5 target serovars[1]**	***S.* Enteritidis**	***S.* Typhimurium**	***S.* Infantis**	***S.* Virchow**	***S.* Hadar**	**Other serovars, non-typeable, and unspecified**	**N**	**% pos (all)**	**5 target serovars[1]**	***S.* Enteritidis**	***S.* Typhimurium**	***S.* Infantis**	***S.* Virchow**	***S.* Hadar**	**Other serovars, non-typeable, and unspecified**
Belgium	Production	-	-	-	-	-	-	-	-	-	2	0	0	0	0	0	0	0	0
Czech Republic	Rearing	3	33.3	33.3	33.3	0	0	0	0	0	9	11.1	11.1	11.1	0	0	0	0	0
	Production	6	0	0	0	0	0	0	0	0	3	66.7	66.7	66.7	0	0	0	0	0
Finland	Rearing	-	-	-	-	-	-	-	-	-	9	11.1	0	0	0	0	0	0	11.1
	Production	-	-	-	-	-	-	-	-	-	7	0	0	0	0	0	0	0	0
France[2]	Rearing	-	-	-	-	-	-	-	-	-	408	0.7	0.7	0.5	0	0	0.2	0	0
	Production	-	-	-	-	-	-	-	-	-	157	0	0	0	0	0	0	0	0
Ireland	Production	-	-	-	-	-	-	-	-	-	2	0	0	0	0	0	0	0	0
Netherlands	Unspecified	-	-	-	-	-	-	-	-	-	339	0.6	0	0	0	0	0	0	0.6
Sweden	Unspecified	-	-	-	-	-	-	-	-	-	22	0	0	0	0	0	0	0	0
United Kingdom	Production	64	0	0	0	0	0	0	0	0	199	0.5	0	0	0	0	0	0	0.5
Total (8 MSs)		**73**	**1.4**	**1.4**	**1.4**	**0**	**0**	**0**	**0**	**0**	**1,157**	**0.9**	**0.5**	**0.4**	**0**	**0**	**0**	**0**	**0.3**
Norway	Rearing	-	-	-	-	-	-	-	-	-	2	50.0	0	0	0	0	0	0	50.0
	Production	-	-	-	-	-	-	-	-	-	2	0	0	0	0	0	0	0	0

Note. Rearing also includes testing in day-old chicks
1. *S.* Enteritidis, S.Typhimurium, *S.* Infantis, *S.* Virchow, *S.* Hadar
2. In France, elite and grandparent flocks are reported together

Egg production line

Parent breeding flocks for egg production

Fifteen MSs and one non-MS reported *Salmonella* data specifically for parent breeding flocks in the egg production line. Ten MSs and Norway recorded no infected parent breeding flocks for laying hen production, while seven MSs reported 0.9% to 22.2% parent breeding flocks *Salmonella* positive during the production period (Table SA26). The occurrence of the five targeted serovars was 5.6% in the Czech Republic and 17.4% in Germany, while France and the Netherlands reported prevalence below the 1% target in production flocks. The United Kingdom found only serovars other than the five targeted ones. *S.* Enteritidis was isolated by three MSs whereas *S.* Typhimurium was reported by Germany and *S.* Infantis and *S.* Virchow by the Netherlands. *S.* Hadar was not isolated by any MSs.

The occurrence of *Salmonella* in parent breeding flocks in the years 2005-2007 is presented in Table SA27. An overall reduction in prevalence can be observed over the years. However, in the Czech Republic, Germany and the Netherlands more flocks were reported positive in 2007 compared to the previous years. This may be due to the more intensive control programmes foreseen by Regulation (EC) No 1003/2005 that was implemented from the beginning of 2007.

Table SA26. **Salmonella *in parent breeding flocks for the egg production line,* Gallus gallus *(flock based data) in countries running control programmes in accordance with Regulation (EC) No 2160/2003, 2007***

Country	Period	Sampling Unit	N	% pos (all)	% positive: 5 target serovars[1]	S. Ent or S. Typ	S. Enteritidis	S. Typhimurium	S. Infantis	S. Virchow	S. Hadar	Other serovars, non-typeable, and unspecified
Austria	Rearing	Flock	5	0	0	0	0	0	0	0	0	0
	Production	Flock	11	0	0	0	0	0	0	0	0	0
Bulgaria	Rearing	Flock	10	0	0	0	0	0	0	0	0	0
	Production	Flock	140	0	0	0	0	0	0	0	0	0
Czech Republic	Rearing	Flock	26	11.5	11.5	11.5	11.5	0	0	0	0	0
	Production	Flock	18	22.2	5.6	5.6	5.6	0	0	0	0	16.7
Denmark	Rearing	Flock	11	0	0	0	0	0	0	0	0	0
	Production	Flock	12	0	0	0	0	0	0	0	0	0
Finland	Rearing	Flock	11	0	0	0	0	0	0	0	0	0
	Production	Flock	21	0	0	0	0	0	0	0	0	0
France	Rearing	Flock	194	0	0	0	0	0	0	0	0	0
	Production	Flock	114	0.9	0.9	0.9	0.9	0	0	0	0	0
Germany	Rearing	Flock	10	0	0	0	0	0	0	0	0	0
	Production	Flock	23	17.4	17.4	17.4	13.0	4.3	0	0	0	0
Greece	Rearing	Flock	1	0	0	0	0	0	0	0	0	0
	Production	Flock	14	0	0	0	0	0	0	0	0	0
Latvia	Production	Flock	6	0	0	0	0	0	0	0	0	0
Netherlands	Rearing	Flock	206	2.9	1.5	0	0	0	0.5	1.0	0	1.5
	Production	Flock	175	1.1	0.6	0	0	0	0	0.6	0	0.6
Slovakia	Rearing	Flock	47	0	0	0	0	0	0	0	0	0
	Production	Flock	47	0	0	0	0	0	0	0	0	0
Slovenia	Rearing	Flock	6	0	0	0	0	0	0	0	0	0
	Production	Flock	7	0	0	0	0	0	0	0	0	0
Spain	Production	Flock	98	0	0	0	0	0	0	0	0	0
Sweden	Rearing	Flock	9	0	0	0	0	0	0	0	0	0
	Production	Flock	24	0	0	0	0	0	0	0	0	0
United Kingdom	Production	Flock	101	1.0	0	0	0	0	0	0	0	1.0
Total (15 MSs)			**1,347**	**1.6**	**1.0**	**0.7**	**0.6**	**0.1**	**0.1**	**0.2**	**0**	**0.6**
Norway	Rearing	Flock	12	0	0	0	0	0	0	0	0	0
	Production	Flock	12	0	0	0	0	0	0	0	0	0

Note. Rearing also includes testing in day-old chicks

1. *S.* Enteritidis, *S.* Typhimurium, *S.* Infantis, *S.* Virchow, *S.* Hadar

Table SA27. | **Salmonella** ***in parent breeding flocks for egg production,*** **Gallus gallus** ***(all age groups[1], flock based data) in countries running control programmes in accordance with Regulation (EC) No 2160/2003, 2005-2007***

	2007			2006			2005		
Country	**N**	**% pos (all)**	**% S. Enteritidis and S. Typhimurium**	**N**	**% pos (all)**	**% S. Enteritidis and S. Typhimurium**	**N**	**% pos (all)**	**% S. Enteritidis and S. Typhimurium**
Austria	16	0	0	14	0	0	36	0.	0
Belgium	-	-	-	35	0	0	68	0	0
Bulgaria	150	0	0	-	-	-	-	-	-
Czech Republic	44	15.9	9.1	27	0	0	223	0.9	0
Denmark	23	0	0	28	0	0	25	0	0
Finland	32	0	0	39	0	0	93	0	0
France	308	0.3	0.3	133	0	0	164	0	0
Germany	33	12.1	12.1	89	0	0	22	0	0
Greece	15	0	0	30	0	0	141	14.2	8.5
Ireland	-	-	-	10	0	0	30	0	0
Italy[2]	-	-	-	-	-	-	11	0	0
Latvia	6	0	0	9	0	0	9	0	0
Lithuania[3]	-	-	-	1,174	3.2	3.2	-	-	-
Netherlands	381	2.1	0	175	0	0	405	0	0
Poland	-	-	-	925	4.1	3.5	412	13.9	6.9
Portugal[4]	-	-	-	-	-	-	12	16.7	16.7
Slovakia	113	0	0	327	0	0	-	-	-
Slovenia	13	0	0	5	0	0	11	18.0	18.0
Spain	98	0	0	262	1.5	0	48	10.4	0
Sweden	33	0	0	74	0	0	38	0	0
United Kingdom[5]	101	1.0	0	69	5.8	0	88	6.8	0
EU Total[6]	**1,366**	**1.5**	**0.7**	**3,425**	**2.4**	**2.0**	**1,836**	**5.5**	**2.4**
Norway[2, 7]	24	0	0	70	0	0	65	0	0

1. Sampling results from day old chicks, rearing and laying period have been used to estimate the percentage of positive flocks. This percentage represents flocks found positive at any point of the lifespan
2. Reported collated data from breeding flocks for egg and meat production line for 2006 and 2007
3. Sample based data
4. Portugal reported for 2006: 2 positive of 19 tested batches (10.5%)
5. Holding based data, collated data from breeding flocks for egg and meat production line for 2005 and 2006
6. Total for 2006 does not include data from Lithuania
7. Data from 2005 relate to farms, not to flocks

Laying hen flocks

Overall 4.3% of the tested laying hen flocks in the EU were *Salmonella* positive in 2007 (Table SA28), and Bulgaria and Norway were the only countries reporting no positive flocks. Among MSs with positive flocks prevalence ranged from 0.2% to 27.1%. The overall occurrence of *Salmonella* was slightly higher in 2007 than in the two previous years. For most MSs only small differences were observed between 2006 and 2007. However, in the Czech Republic a significant increase was reported and this may be explained by improved monitoring due to the early implementation of control programmes foreseen in the target Regulation (EC) No 1168/2006. Also Latvia reported an early implementation of this more intensive monitoring.

A total of 15 MSs and one non-MS reported data from both parent breeding flocks and laying hen production flocks (Table SA27-SA28). Eleven countries reported no infected breeding flocks and among these the majority reported low *Salmonella* occurrences in rearing and production flocks (0%-4%). Latvia and Spain reported a high prevalence in laying hen production although they had no positive parent breeding flocks. In the United Kingdom, positive flocks were detected among laying hen flocks, but the number of tested flocks was not reported.

MS specific trends in *Salmonella* spp. and *S.* Enteritidis / *S.* Typhimurium prevalence in laying hen flocks for 2004 to 2007 are shown in Figures SA16a and SA16c, respectively. In most reporting countries only small changes compared to 2006 were observed, but the Czech Republic reported a clear increase. At EU level, no significant statistical overall trend in the weighted mean of *Salmonella* spp. or *S.* Enteritidis / *S.* Typhimurium prevalence was observed among the group of 14 reporting MSs providing data for these years (Figure SA16b and SA16d). See Appendix 1 and notes to Figure SA16b for descriptions of statistics.

In general, more MSs found *Salmonella* spp. in laying hen flocks compared to breeding flocks in the egg production line. This may be because of tighter bio-security at breeding flock level and due to the mandatory control programmes in breeding flocks already set down by the Directive 92/117/EC.

Among the MSs that have elite, grandparent and parent breeding flocks for the egg production line and laying hen flocks, the Czech Republic reported to have isolated *Salmonella* Enteritidis from all the productive stages.

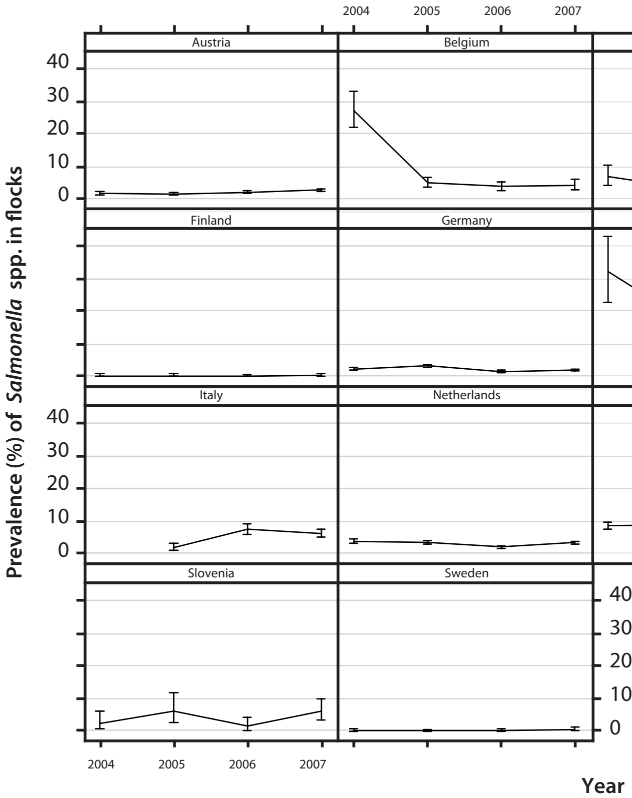
Table SA28. | **Salmonella** ***in laying hen flocks (all age groups[1], flock based data), 2005-2007***

	2007			2006			2005		
Country	**N**	**% pos (all)**	**% S. Enteritidis and S. Typhimurium**	**N**	**% pos (all)**	**% S. Enteritidis and S. Typhimurium**	**N**	**% pos (all)**	**% S. Enteritidis and S. Typhimurium**
Austria	4,965	2.6	1.8	4,359	2.0	1.3	4,735	1.4	1.0
Belgium	487	5.3	2.9	897	3.7	0	979	4.9	0
Bulgaria	1,532	0	0	-	-	-	-	-	-
Czech Republic	689	17.0	15.8	366	0	0	-	-	-
Denmark	836	0.6	0.5	854	0.4	0.2	913	1.4	1.3
Estonia	61	1.6	1.6	25	4.0	4.0	-	-	-
Finland[3]	842	0.2	0.1	749	0	0	817	<0.1	0.1
France[4]	5,075	2.5	2.5	4,706	2.9	2.9	5,656	1.6	0
Germany	5,693	1.8	1.7	2,764	1.4	0.8	5,270	3.1	2.4
Greece	61	3.3	1.6	81	3.7	3.7	219	48.9	16.0
Hungary	-	-	-	417	2.2	2.2	-	-	-
Ireland	337	0.6	0	340	0.3	0.3	217	2.8	1.4
Italy	1,535	6.3	2.0	1,030	7.5	1.8	699	8.6	1.9
Latvia	73	20.5	20.5	-	-	-	-	-	-
Lithuania	-	-	-	926	3.0	0	981	1.0	0.9
Netherlands	6,877	3.4	3.4	5,008	2.0	2.0	4,117	3.5	2.0
Poland	6,296	8.3	5.9	2,737	9.9	4.7	2,869	8.8	0.1
Slovakia	1,172	3.2	2.2	1,298	2.2	2.0	309	13.3	0.6
Slovenia	246	6.1	4.5	205	1.5	0.5	130	6.2	5.4
Spain	771	27.1	11.8	1,125	31.2	13.1	-	-	-
Sweden	778	0.5	0.4	913	0.1	0.1	1,109	0.1	0.1
EU Total	**38,326**	**4.3**	**3.2**	**28,800**	**4.0**	**2.3**	**29,020**	**3.5**	**0.5**
Norway[2]	696	0	0	641	0	0	732	0	0
Switzerland[2]	521	0.6	0.6	1,828	0.2	0.2	1,631	0.5	0.5

Note: UK did not include the number of tested flocks, but reported 67 incidents of isolation of *Salmonella* in layer flocks in 2007

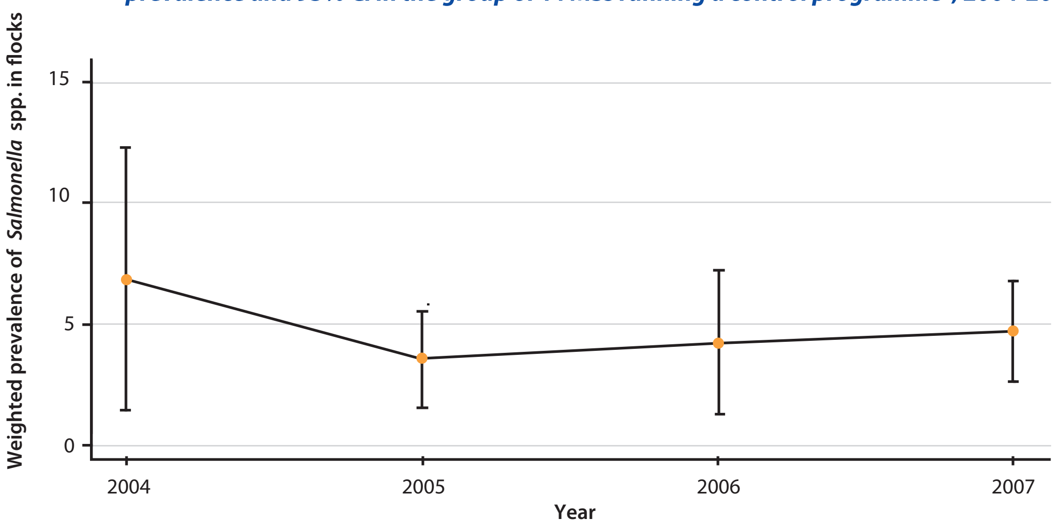
1. Combined data (day-old chicks, rearing and production) have been used to estimate the percentage of positive flocks. This percentage represents flocks found positive at any point of the lifespan
2. Holding based data for Norway (2005-2007) and Switzerland (2007)
3. In Finland, the exact number of flocks is not known. This figure is extrapolated from the number of samplings (2004-2006)
4. In France, only tests for *S.* Enteritidis and *S.* Typhimurium

Figure SA16a. | **Salmonella *spp. in laying hen flocks (all age groups[1], flock based data), prevalence and 95% CI[2] in MSs running a control programme[3], 2004-2007***



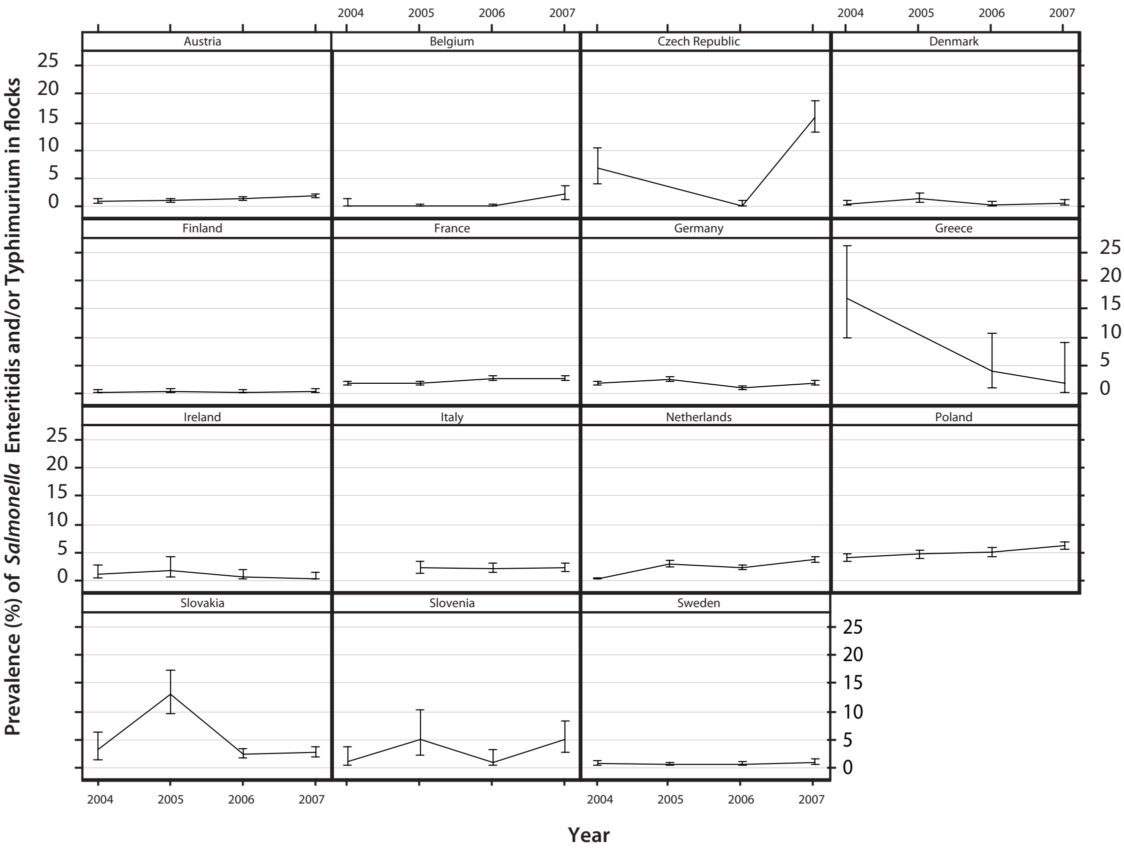
1. Combined data (day-old chicks, rearing and production) have been used to estimate the prevalence of flocks that were found positive at any point in their lifespan
2. Vertical bars indicate exact binomial 95% confidence intervals
3. Includes only MSs with data from at least three years

Figure SA16b. | **Salmonella *spp. in laying hen flocks (all age groups[1], flock based data), weighted[2] mean prevalence and 95% CI in the group of 14 MSs running a control programme[3], 2004-2007***



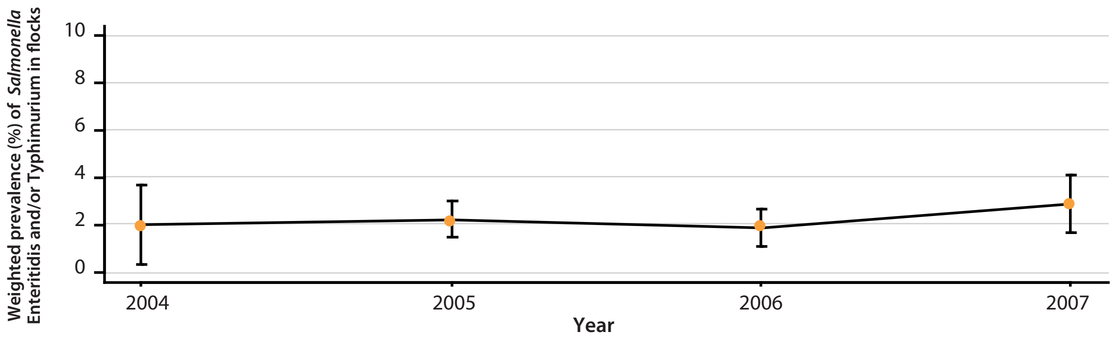
1. Combined data (day-old chicks, rearing and production) have been used to estimate the prevalence of flocks that were found positive at any point in their lifespan
2. Weight is the ratio between the number of laying hens per MS in 2005-2006, and the number of tested flocks per MS per year. Numbers of laying hens per MS were based on the population data reported for 2006, and supplemented with EUROstat data from 2005 (AT and IT)
3. Includes only MSs with data from at least three years: AT, BE, CZ, DK, FI, DE, GR, IE, IT, NL, PL, SK, SI, SE

Figure SA16c. **Salmonella *Enteritidis and/or Typhimurium in laying hen flocks (all age groups[1], flock based data), prevalence and 95% CI[2] in MSs running a control programme[3], 2004-2007***



1. Combined data (day-old chicks, rearing and production) have been used to estimate the prevalence of flocks that were found positive at any point in their lifespan
2. Vertical bars indicate exact binomial 95% confidence intervals
3. Includes only MSs with data from at least three years

Figure SA16d. **Salmonella *Enteritidis and/or Typhimurium in laying hen flocks (all age groups[1], flock-based data), weighted[2] mean prevalence and 95% CI in the group of 15 MSs running a control programme[3], 2004-2007***



1. Combined data (day-old chicks, rearing and production) have been used to estimate the prevalence of flocks that were found positive at any point in their lifespan
2. Weight is the ratio between the number of laying hens per MS in 2005-2006, and the number of tested flocks per MS per year. Numbers of laying hens per MS were based on the population data reported for 2006, and supplemented with EUROstat data from 2005 (AT and IT)
3. Includes only MSs with data from at least three years: AT, BE, CZ, DK, FI, FR, DE, GR, IE, IT, NL, PL, SK, SI, SE

For further information of reported data please refer to Level 3.

Meat production line of *Gallus gallus*

Parent breeding flocks

Together 18 MSs and one non-MS reported data specifically for parent breeding flocks in the meat production line. Generally, MSs reported higher prevalence during the production period compared to day-old chicks or the rearing period (Table SA29). Bulgaria, Estonia, Finland, Latvia and Slovenia did not report any infected flocks, whereas the other MSs reported *Salmonella* prevalence between 0.1% and 65.0%. In total, 13 MSs reported a prevalence of 1% or below for the five target serovars. The prevalence of the five targeted serovars was high in Portugal and Greece. *S.* Enteritidis was the most frequently isolated serovar and reported from most MSs with positive parent breeding flocks. *S.* Virchow was reported only from Spain (Table SA29).

When comparing prevalence for the years 2005 to 2007, a reduction in the total proportion of positive flocks is observed (Table SA30). However, there were considerable variations among MSs and several MSs reported an increase in prevalence. Estonia, Ireland, the Netherlands, Spain and the United Kingdom reported marked reductions in prevalence, whereas Portugal, Austria, the Czech Republic and Greece reported increases. In 2007, the new, more sensitive control programmes were implemented by MSs in accordance with the Regulation (EC) No 1003/2005, and therefore, data obtained is not fully comparable between years.

Table SA29. **Salmonella *in parent breeding flocks for broiler production,* Gallus gallus *(flock based data) in countries running control programmes in accordance with Regulation (EC) No 2160/2003, 2007***

Country	Period	N	% pos (all)	% positive: 5 target serovars[1]	S. Enteritidis	S. Typhimurium	S. Infantis	S. Virchow	S. Hadar	Other serovars, non-typeable, and unspecified
Austria	Rearing	22	0	0	0	0	0	0	0	0
	Production	50	8.0	0	0	0	0	0	0	8.0
Bulgaria	Rearing	27	0	0	0	0	0	0	0	0
	Production	108	0	0	0	0	0	0	0	0
Czech Republic	Rearing	700	2.6	0.9	0.7	0	0.1	0	0	1.7
	Production	525	6.3	4.8	4.0	0.6	0.2	0	0	1.5
Denmark	Rearing	152	0	0	0	0	0	0	0	0
	Production	258	1.2	1.2	0	1.2	0	0	0	0
Estonia	Rearing	3	0	0	0	0	0	0	0	0
	Production	3	0	0	0	0	0	0	0	0
Finland	Rearing	139	0	0	0	0	0	0	0	0
	Production	142	0	0	0	0	0	0	0	0
France	Rearing	1,710	0.2	0.2	0.1	0.1	0	0	0.1	0
	Production	906	0.7	0.7	0.3	0	0.1	0	0.2	0
Germany	Rearing	79	3.8	1.3	1.3	0	0	0	0	2.5
	Production	2,329	0.8	<0.1	<0.1	0	0	0	0	0.8
Greece	Rearing	7	0	0	0	0	0	0	0	0
	Production	22	22.7	22.7	9.1	0	0	0	13.6	0
Ireland	Production	487	5.5	0	0	0	0	0	0	5.5
Latvia	Production	15	0	0	0	0	0	0	0	0
Netherlands	Rearing	1,365	0.1	0.1	0.1	0	0	0	0	0
	Production	997	1.3	1.0	0.9	0	0.1	0	0	0
Portugal	Rearing	20	65.0	65.0	65.0	0	0	0	0	0
Slovakia	Rearing	134	0	0	0	0	0	0	0	0
	Production	528	0.9	0.8	0.8	0	0	0	0	0.2
Slovenia	Rearing	80	0	0	0	0	0	0	0	0
	Production	111	0	0	0	0	0	0	0	0
Spain	Production	741	2.6	2.4	1.5	0.3	0	0.1	0.5	0.1
Sweden	Rearing	100	2.0	2.0	0	2.0	0	0	0	0
	Production	114	0.9	0.9	0	0.9	0	0	0	0
United Kingdom	Production	1,055	0.9	0.1	0	0	0	0	0	0.9
Total (18 MSs)		**12,929**	**1.4**	**0.8**	**0.6**	**0.1**	**<0.1**	**<0.1**	**0.1**	**0.7**
Norway	Rearing	87	0	0	0	0	0	0	0	0
	Production	135	0.7	0	0	0	0	0	0	0.7

Note: Rearing include also testing in day-old chicks
1. *S.* Enteritidis, S.Typhimurium, *S.* Infantis, *S.* Virchow, *S.* Hadar

When compared to the results in Table SA26 on *Salmonella* in parent breeding flocks in the egg production line, the occurrence of *Salmonella* spp. appears to be slightly lower in parent breeding flocks for the meat production line at Community level.

Among MSs that have elite, grandparent and parent breeding flocks for the meat production line, the Czech Republic reported to have isolated *Salmonella* Enteritidis from all the productive stages.

Table SA30. **Salmonella *in parent breeding flocks for the meat production line (all age groups[1], flock based data) in countries running control programmes in accordance with the Regulation (EC) 2160/2003, 2005-2007***

	2007			2006			2005		
Country	N	% pos (all)	% S. Enteritidis and S. Typhimurium	N	% pos (all)	% S. Enteritidis and S. Typhimurium	N	% pos (all)	% S. Enteritidis and S. Typhimurium
Austria	72	5.6	0	76	0	0	142	1.4	1.4
Belgium	-	-	-	724	1.8	0	925	1.9	0.3
Bulgaria	135	0	0	-	-	-	-	-	-
Czech Republic	1,225	4.2	2.4	301	0.4	0.4	-	-	-
Denmark	410	0.7	0.7	113	1.8	1.8	120	0	0
Estonia	6	0	0	16	37.5	37.5	-	-	-
Finland	281	0	0	269	0	0	305	0	0
France	2,616	0.3	0.2	1,607	0.4	0.4	1,833	0.4	0.4
Germany	2,408	0.9	0.1	2,272	0.8	<0.1	2,409	1.3	0
Greece	29	17.2	6.9	277	0.7	0	168	6.0	2.4
Ireland	487	5.5	0	583	9.4	0	522	11.5	0
Italy[2]	-	-	-	-	-	-	31	0	0
Latvia	15	0	0	16	0	0	14	0	0
Lithuania[3]	-	-	-	726	3.2	2.8	-	-	-
Netherlands	2,362	0.6	0.5	347	1.4	1.5	590	6.3	0.8
Poland	-	-	-	2,736	7.8	3.5	1,698	9.4	5.7
Portugal[4]	20	65.0	65.0	-	-	-	111	27.0	23.4
Slovakia	747	0.7	0.5	744	0.5	0.4	-	-	-
Slovenia	191	0	0	59	0	0	71	1.4	1.4
Spain	741	2.6	1.8	1,087	20.5	10.8	823	12.5	9
Sweden	214	1.4	1.4	254	0.8	0.8	138	0	0
United Kingdom[5]	1,055	0.9	0.1	354	13.3	0.6	567	18.7	0.2
EU Total[6]	**13,014**	**1.4**	**0.7**	**12,561**	**5.0**	**2.1**	**10,467**	**5.4**	**2.1**
Norway[7]	222	0.5	0	70	0	0	65	0	0
Switzerland	227	0	0	-	-	-	-	-	-

1. Combined data (day-old chicks, rearing and production) have been used to estimate the percentage of positive flocks. This percentage represents flocks found positive at any point of the lifespan
2. In Italy in 2006, collated data were reported from breeding flocks for the egg and meat production line: 338 tested flocks and 4.1% positive
3. In Lithuania in 2006, sample based data
4. In Portugal in 2006: 51 tested batches 13.7% positive
5. In the United Kingdom, holding based data for 2005 and 2006
6. EU total does not include data from Lithuania for 2006
7. In Norway in 2005-2006, holding based data, collated data from breeding flocks for egg and meat production line

Broiler flocks

Overall, 3.7% of broiler flocks tested *Salmonella* positive during 2007 in reporting MSs. This finding is approximately at the same level as in 2006. Bulgaria was the only MS not to report any positive broiler flocks. Among the other reporting MSs, *Salmonella* prevalence in flocks ranged between 0.2% and 25.3%. Eight MSs reported a reduction in prevalence and seven MSs an increase compared to 2006. In particular, Spain recorded a marked decrease in prevalence (Table SA31).

Fourteen MSs and one non-MS provided data both from parent breeding flocks and broiler flocks. Five of the the countries that had a prevalence of less than 1% in parent breeding flocks also reported low prevalence in broiler flocks (<2%,) whereas four of these countries reported a slightly higher prevalence (4.0%-9.7%) (Table SA30 and SA31).

For those MSs that provided data consistently, during the years 2004 to 2007, on *Salmonella* and *S.* Enteritidis/*S.* Typhimurium prevalence in broiler flocks, MS specific trends are presented in Figure SA17a and SA17c. In the majority of these MSs these trends appear to be either decreasing or to be stable. The weighted mean prevalence of *Salmonella* spp. or *S.* Enteritidis/*S.* Typhimurium in the group of these 11 MSs are presented in Figures SA17b and SA17d. In this group of MSs, both the trends for *Salmonella* spp. and *S.* Enteritidis/*S.* Typhimurium seem to decrease slightly, but these trends were not statistically significant.

See Appendix 1 and notes to Figure SA17b for statistical descriptions.

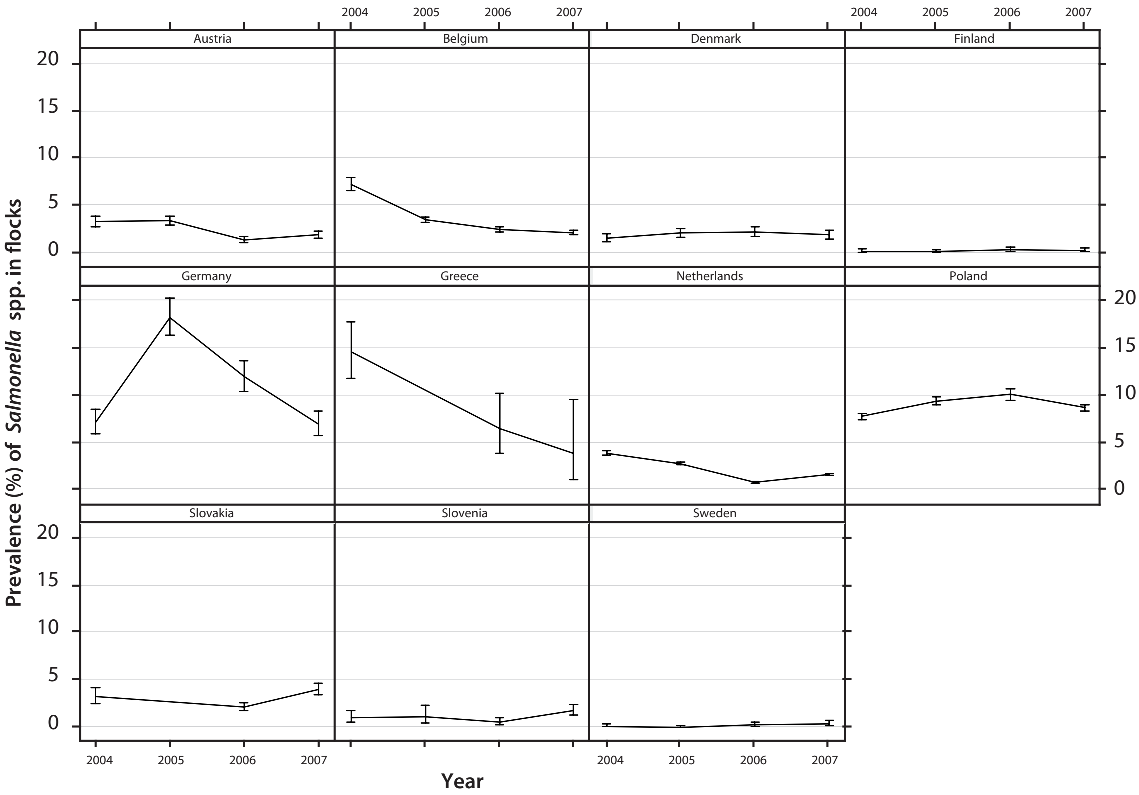
Table SA31. | **Salmonella *in broiler flocks (all age groups[1], flock based data), 2005-2007***

	2007			2006			2005		
Country	N	% pos (all)	% S. Enteritidis and S. Typhimurium	N	% pos (all)	% S. Enteritidis and S. Typhimurium	N	% pos (all)	% S. Enteritidis and S. Typhimurium
Austria	5,123	1.9	0.2	4,546	1.3	0.2	6,021	3.3	2.3
Belgium	8,809	3.1	0	13,596	2.4	0	14,768	3.4	0
Bulgaria	946	0	0	-	-	-	-	-	-
Denmark	3,486	1.9	0.2	3,640	2.2	0.4	4,083	2.1	0.7
Estonia	62	9.7	9.7	154	5.2	5.2	-	-	-
Finland	3,278	0.2	0	3,020	0.3	0	3,087	0.1	0
France	-	-	-	383	8.9	0.5	-	-	-
Germany	1,552	7.0	0.1	1,566	11.9	0.7	1,495	18.3	1.7
Greece	104	3.8	0	262	6.5	0.8	-	-	-
Hungary	-	-	-	359	66.0	8.1	-	-	-
Italy[2]	136	5.9	1.5	75	32.0	16.0	57	0	0
Latvia	150	5.3	3.3	121	9.1	7.4	-	-	-
Lithuania	-	-	-	-	-	-	788	1.3	1.3
Netherlands	56,263	1.6	0.1	26,025	0.8	0.1	58,635	2.8	0.3
Poland	27,218	8.7	4.6	10,010	10.1	5.2	20,073	9.4	3.0
Slovakia	4,548	4.0	2.6	4,430	2.1	1.7	-	-	-
Slovenia	2,491	1.8	0.2	1,800	0.5	0.3	621	1.1	0.5
Spain	815	25.3	14.0	388	41.2	29.6	-	-	-
Sweden	2,428	0.3	0.2	2,351	0.1	0.2	2,368	0	0
Total	**117,409**	**3.7**	**1.3**	**72,726**	**3.4**	**1.2**	**111,996**	**4.1**	**0.9**
Norway	4,419	<0.1	<0.1	4,051	0	0	3,883	<0.1	0

Note: UK did not include the number of tested flocks, but reported 82 incidents of isolation of *Salmonella* in broiler flocks in 2007

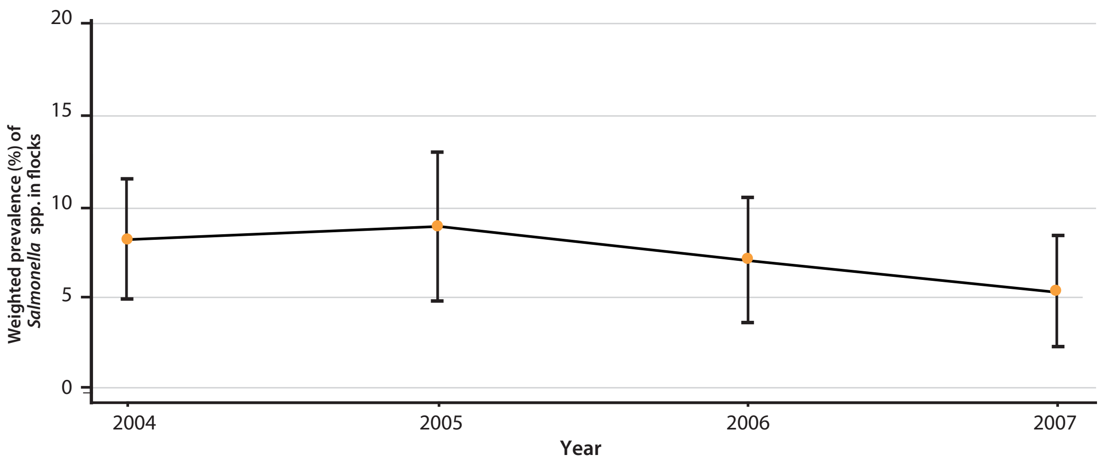
1. Combined data (day-old chicks, rearing and production flocks) have been used to estimate the percentage of positive flocks. This percentage represents flocks found positive at any point in the lifespan
2. In Italy, holding based data

Figure SA17a. **Salmonella** ***spp. in broiler flocks (all age groups[1], flock based data), prevalence and 95% CI[2] in MSs running a control programme[3], 2004-2007***



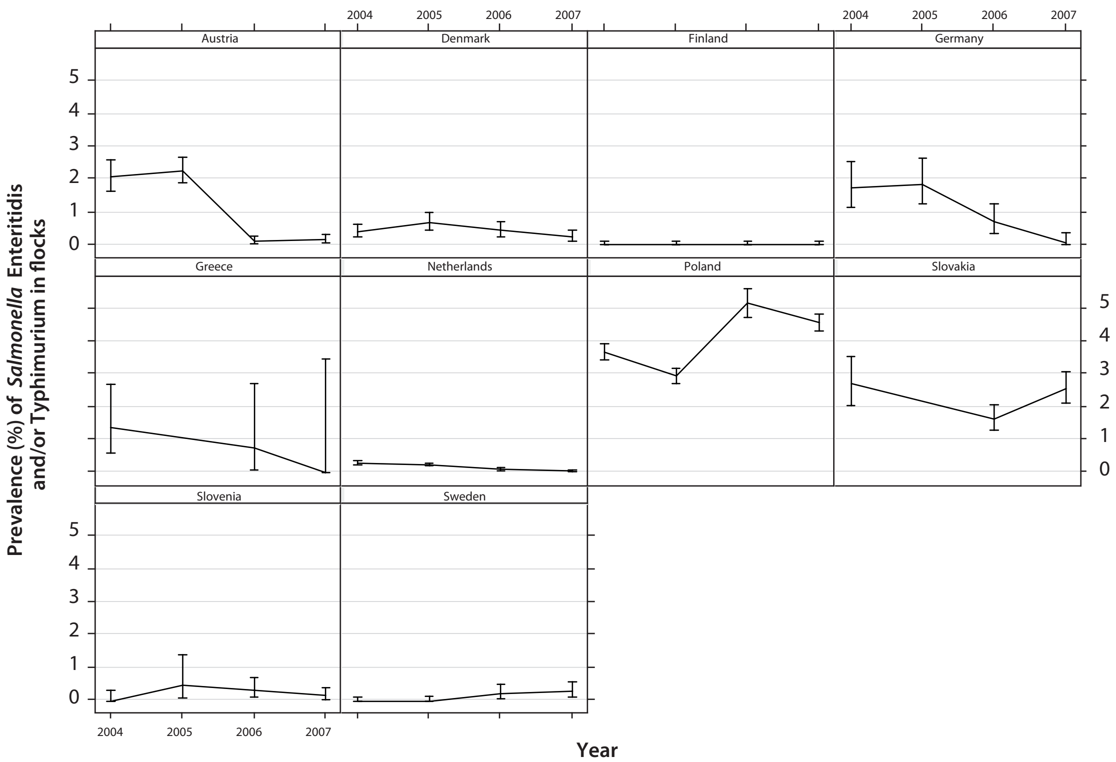
1. Combined data (day-old chicks, rearing and production) have been used to estimate the prevalence of flocks that were found positive at any point in their lifespan
2. Vertical bars indicate exact binomial 95% confidence intervals
3. Includes only MSs with data from at least three years

Figure SA17b. **Salmonella** ***spp. in broiler flocks (all age groups[1], flock based data), weighted[2] mean prevalence and 95% CI in the group of 11 MSs running a control programme[3], 2004-2007***



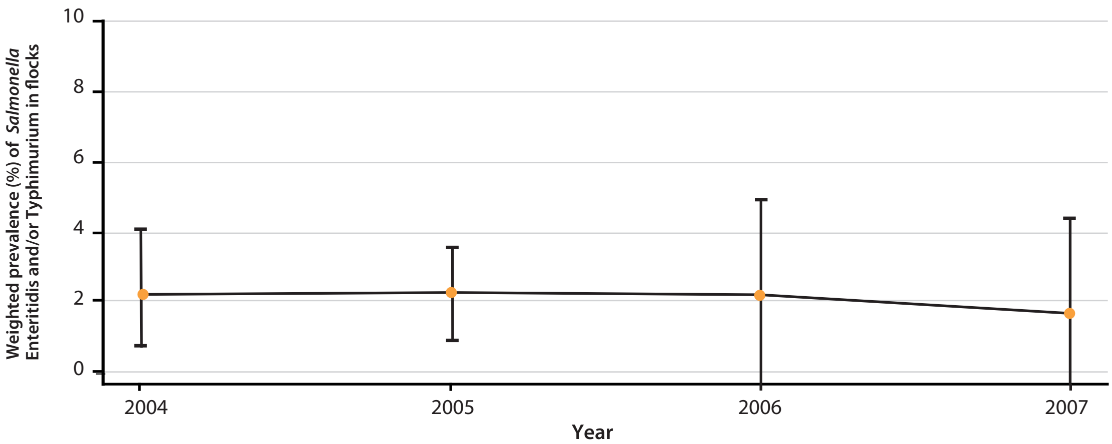
1. Combined data (day-old chicks, rearing and production) have been used to estimate the percentage of positive flocks. This percentage represents flocks found positive at any point in the lifespan of a flock
2. Weight is the ratio between the number of broilers per MS in 2005-2006, and the number of tested flocks per MS per year. Numbers of broilers per MS were based on the population data reported for 2006, and supplemented with EUROSTAT data from 2005
3. Includes only MSs with data from at least three years: AT, BE, DE, DK, FI, GR, NL, PL, SK, SI and SE

Figure SA17c. | **Salmonella *Enteritidis and/or Typhimurium in broiler flocks (all age groups[1], flock based data), prevalence and 95% CI[2] in MSs running a control programme[3], 2004-2007***



1. Combined data (day-old chicks, rearing and production) have been used to estimate the percentage of positive flocks. This percentage represents flocks found positive at any point in the lifespan of a flock
2. Vertical bars indicate exact binomial 95% confidence intervals
3. Includes only MS with data from at least three years

Figure SA17d. | **Salmonella *Enteritidis and/or Typhimurium in broiler flocks (all age groups[1], flock based data), weighted[2] mean prevalence and 95% CI in the group of 10 MSs running a control programme[3], 2004-2007***



1. Combined data (day-old chicks, rearing and production) have been used to estimate the percentage of positive flocks. This percentage represents flocks found positive at any point in the lifespan of a flock
2. Weight is the ratio between the number of broilers per MS in 2005-2006, and the number of tested flocks per MS per year. Numbers of broilers per MS were based on the population data reported for 2006, and supplemented with EUROSTAT data from 2005
3. Include only MSs with data from at least three years: AT, DE, DK, FI, GR, PL, SK, SI, SE and NL

Salmonella serovars in *Gallus gallus*

Fifteen MSs and one non-MS provided information on *Salmonella* serovars in *Gallus gallus* flocks in 2007. As in previous years, *S.* Enteritidis was the most frequently reported serovar (37.5% of the isolates) followed by *S.* Typhimurium (7.2%) and *S.* Infantis (6.3%) (Table SA32). All MSs providing information on serovars in *Gallus gallus* reported findings of *S.* Enteritidis except Finland.

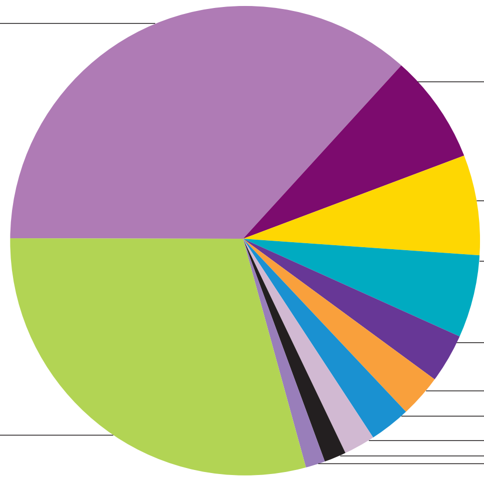
The distribution of the ten most common serovars in flocks of *Gallus gallus* is shown in Table SA32 and in Figure SA18.

Table SA32. | ***Distribution of the ten most common* Salmonella *serovars in flocks of* Gallus gallus*, 2007. The serovar distribution (% isolates) was based on the number of serotyped isolates, including non-typeable isolates. Ranking was based on the sum of all reported serovars***

		% positive										
Countries	**No. of isolates serotyped**	**S. Enteritidis**	**S. Typhimurium**	**S. Infantis**	**S. Paratyphi B var. Java**	**S. Virchow**	**S. Hadar**	**S. Livingstone**	**S. Mbandaka**	**S. Senftenberg**	**S. Bredeney**	**Other serovars, non-typeable, and unspecified**
Total no. of isolates	**5,888**	**2,213**	**425**	**368**	**290**	**184**	**178**	**170**	**128**	**103**	**85**	**1,744**
Austria	436	35.8	8.9	14.4	-	-	3.2	0.5	0.7	2.1	2.1	32.3
Belgium	745	38.5	7.9	10.5	10.7	2.0	4.4	0.9	-	1.7	-	23.2
Denmark	70	2.9	14.3	10.0	-	-	-	-	-	4.3	-	68.6
Estonia	23	78.3	-	-	-	-	-	-	-	-	-	21.7
Finland	35	-	2.9	5.7	-	-	-	17.1	-	-	-	74.3
Germany	270	65.9	13.3	0.7	2.2	-	0.4	2.2	4.8	0.4	0.4	9.6
Italy	729	13.7	8.1	-	-	6.0	8.8	15.6	-	-	9.1	38.7
Netherlands	574	8.4	5.9	11.3	35.5	4.2	1.2	0.5	2.6	4.9	-	25.4
Poland	1,646	55.0	7.8	4.7	-	4.5	2.2	-	2.3	1.3	-	22.0
Portugal	37	83.8	-	13.5	-	2.7	-	-	-	-	-	0
Romania	125	16.8	18.4	-	-	13.6	8.8	1.6	-	4.8	-	36.0
Slovakia	269	51.3	4.8	4.8	-	-	-	-	-	0.4	1.1	37.5
Slovenia	85	27.1	-	21.2	-	-	-	-	-	-	-	51.8
Spain	587	45.1	2.7	6.1	-	1.0	1.9	0.9	1.0	0.5	1.0	39.7
United Kingdom	257	15.6	2.3	0.4	-	1.2	-	9.7	20.6	6.6	-	43.6
Proportion of serotyped isolates		**37.6**	**7.2**	**6.3**	**4.9**	**3.1**	**3.0**	**2.9**	**2.2**	**1.7**	**1.4**	**29.6**

Note: Data are only presented for sample size ≥10, include both clinical and monitoring isolates, and it should be noted that there can be some overlap of isolates between the two reportings and the sum of isolates do not correspond to the number of tested flocks

Figure SA18 | ***Distribution of the ten most common* Salmonella *serovars in flocks of* Gallus gallus *in the EU (15 MSs), 2007***



Note. Includes data from: AT, BE, DE, DK, EE, ES, FI, IT, NL, PL, PT, RO, SK, SI, and UK (N=5.888, Table SA32).

For further information of reported data please refer to Level 3.

Ducks and geese

Poland was the only MS reporting a substantial amount of data from *Salmonella* testing in duck breeding flocks. Of the 295 samples tested, 19 were positive (6.4%). This was a decrease compared to the previous year.

Three MSs provided data on *Salmonella* in production flocks of ducks (of ≥25 flocks) and reported prevalence ranged between 4.0% and 21.2% (Table SA33). Norway did not detect any positive production flocks. Poland was the only MS to report *S.* Enteritidis findings, whereas *S.* Typhimurium was isolated both in Poland and Germany. The relative high prevalence of *Salmonella* in Austria was mainly caused by *S.* Indiana and *S.* Kottbus.

Table SA33. | **Salmonella *in production flocks of ducks (all age groups[1], flock based data), 2005-2007***

	2007			2006			2005		
Country	**N**	**% pos (all)**	**% S. Enteritidis and S. Typhimurium**	**N**	**% pos (all)**	**% S. Enteritidis and S. Typhimurium**	**N**	**% pos (all)**	**% S. Enteritidis and S. Typhimurium**
Austria	33	21.2	0	26	11.5	7.8	46	8.7	8.7
Denmark	-	-	-	255	93.3	0	242	74.0	0
Germany[2]	25	4.0	4.0	119	19.3	8.4	160	7.5	1.9
Greece	-	-	-	32	6.3	3.1	-	-	-
Poland	690	10.3	2.9	204	15.2	7.4	568	15.3	2.1
Sweden	-	-	-	40	7.5	5.0	26	0	0
Total (6 MSs)	**748**	**10.6**	**2.8**	**676**	**44.4**	**4.4**	**1,042**	**27.1**	**1.8**
Norway	85	0	0	50	0	0	40	0	0

Note: Data are only presented for sample size ≥25
1. Combined data (day-old chicks, rearing and production) have been used to estimate the percentage of positive flocks. This percentage represents flocks found positive at any point in the lifespan
2. In Germany in 2006: an additional 2 positive of 79 tested animals (2.5%) was reported

Poland tested a substantial number of geese breeding flocks for *Salmonella*. Of the 1,484 samples tested, 40 were positive (2.7%). This was a decrease compared to 2006 (7.8% infected).

Within the three MSs reporting data on *Salmonella* in production flocks of geese, prevalence varied between 9.1% and 20.7% (Table SA34). *S. Enteritidis* was only reported from Poland whereas *S.* Typhimurium was reported from all three MSs.

Table SA34. | **Salmonella *in production flocks of geese (all age groups[1], flock based data), 2005-2007***

	2007			2006			2005		
Country	**N**	**% pos (all)**	**% S. Enteritidis and S. Typhimurium**	**N**	**% pos (all)**	**% S. Enteritidis and S. Typhimurium**	**N**	**% pos (all)**	**% S. Enteritidis and S. Typhimurium**
Austria	94	11.7	4.3	94	8.5	3	151	17.2	10.6
Germany	29	20.7	17.2	56	3.6	1.8	111	3.6	2.7
Poland	2,726	9.1	4.1	1,238	11.1	3.4	2,377	10.1	2.0
Sweden	-	-	-	-	-	-	42	0	0
Total (4 MSs)	**2,849**	**9.3**	**4.2**	**1,388**	**10.6**	**3.3**	**2,681**	**10.1**	**2.5**

Note: Data are only presented for sample size ≥25

1. Combined data (day-old chicks, rearing and production) have been used to estimate the percentage of positive flocks. This percentage represents flocks found positive at any point in the lifespan

For further information on reported data please refer to Level 3.

Turkeys

Finland, Italy, Poland and Slovakia reported information from routine monitoring (not part of the baseline survey) of turkey breeding flocks covering at least 25 flocks for 2007. *Salmonella* was detected in all four MSs and the proportion of positive flocks was 2.1%, 1.7%, 3.5% and 2.4%, respectively.

In addition, 12 MSs and one non-MS provided data on the routine monitoring of the turkey production flocks. All these MSs found *Salmonella* positive flocks at levels 0.1% to 14.8% (Table SA35).

For further information on reported data please refer to Level 3.

Table SA35. | **Salmonella** ***in production flocks of turkeys, routine monitoring (all age groups[1], flock based data), 2005-2007***

	2007			2006			2005		
Country	**N**	**% pos (all)**	**% S. Enteritidis and S. Typhimurium**	**N**	**% pos (all)**	**% S. Enteritidis and S. Typhimurium**	**N**	**% pos (all)**	**% S. Enteritidis and S. Typhimurium**
Austria	276	5.4	0	282	9.6	0	1,092	6.3	0.1
Belgium	91	7.7	0	-	-	-	127	7.9	0
Denmark	-	-	-	32	0	0	-	-	-
Finland	711	0.1	0.1	1,026	0.2	0.2	900	0.1	0
Germany[2]	26	3.8	0	675	3.4	0.7	353	3.4	0.3
Greece	29	10.3	3.4	34	14.7	0	-	-	-
Ireland	27	14.8	0	76	0	0	-	-	-
Italy[3]	46	8.7	6.5	-	-	-	40	5.0	2.5
Netherlands	216	1.9	0	-	-	-	-	-	-
Poland	7,150	6.6	1.8	2,260	6.3	2.1	4,952	8.1	1.7
Slovakia	151	4.6	0	29	6.9	6.9	-	-	-
Slovenia	121	3.3	0	92	4.4	0	72	11.1	1.2
Sweden	115	0.9	0	140	0	0	108	0	0
Total (13 MSs)	**9,339**	**7.8**	**1.5**	**4,646**	**4.4**	**1.2**	**7,644**	**6.6**	**1.2**
Norway	424	0	0	345	0	0	310	0	0

Note: Data are only presented for sample size ≥25

1. Combined data (day-old chicks and production) have been used to estimate the percentage of positive flocks. This percentage represents flocks found positive at any point in the lifespan
2. Germany reported for 2006, 18 positive of 30,384 tested animals (0.1%)
3. Italy reported for 2006, 45 positive of 165 tested slaughter batches (27.3%)

Information from the baseline survey on *Salmonella* prevalence in turkey flocks in the EU, 2006-2007

From October 2006 to September 2007, an EU-wide fully harmonised *Salmonella* baseline survey was conducted in breeding and production flocks of turkeys with at least 250 and 500 birds, respectively. Twenty-two MSs and Norway participated in the survey.

The survey was carried out in accordance with Regulation (EC) No 2160/2003, which requires a Community reduction target for *Salmonella* prevalence in turkeys to be laid down. Therefore, comparable data on the current prevalence in MSs was needed to be available.

Samples were taken by the competent authorities in each MS and were tested by the National Reference Laboratory or an authorised laboratory using the ISO 6579 annex D method.

Breeding turkey flocks – baseline survey

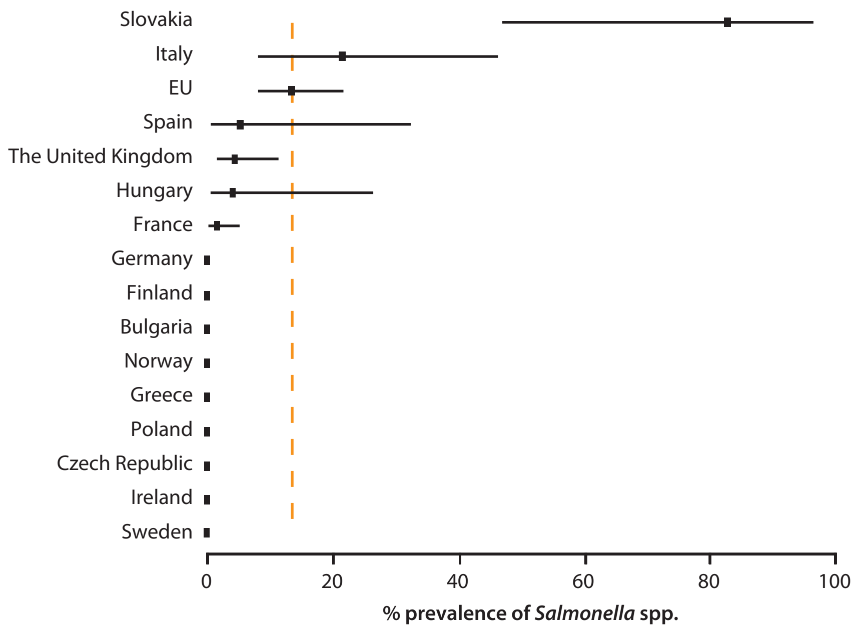
According to Commission Decision 2006/662/EC five environmental faeces samples were taken from breeding turkey flocks within nine weeks of slaughter. In total, 539 breeding turkey flocks with validated results from 14 MSs and Norway were included in the survey analyses. The geographical distribution of breeding turkeys in the EU was highly heterogeneous. France accounted for 56.0% of the breeding population, followed by Italy (11.9%) and the United Kingdom (10.1%). None of the remaining MSs reached 5% of the total breeding population.

Six of the 14 MSs reported *Salmonella* spp. in breeding flocks and the overall EU weighted prevalence was 13.6% (Figure SA19a). Prevalence varied widely from 0% to 82.1% in reporting MSs and eight MSs did not detect any positive breeding flocks. Three MSs isolated S.Enteritidis/S. Typhimurium, and this resulted in an EU prevalence of 1.7% for these two serovars, varying from 0% to 8.3% within MSs.

The distribution of serovars varied between countries; no *Salmonella* serovar was isolated in more than three countries. The five most frequently isolated *Salmonella* serovars at flock level were *S.* Saintpaul (40.0% of isolated serovars), *S.* Kottbus (15.6%), *S.* Heidelberg (8.1%), *S.* Derby (8.1%) and *S.* Typhimurium (7.4%).

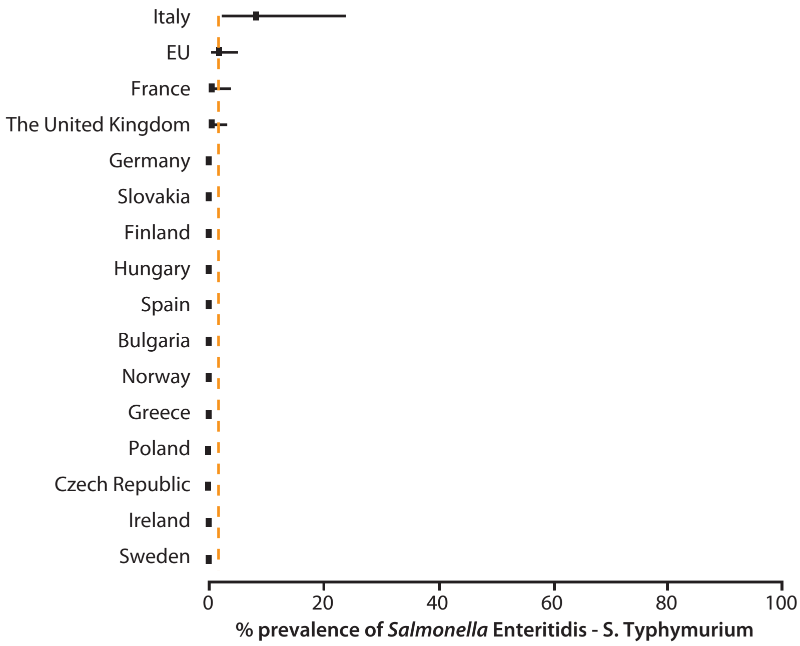
The weighted prevalence of *S.* Typhimurium and/or *S.* Enteritidis are presented in Figure SA19b.

Figure SA19a. | ***Weighted prevalence[1,2] of* Salmonella *spp. in breeding turkey flocks, baseline survey, 2006-2007***



1. Breeding turkey flocks prevalence estimate (weighted proportion of the total number of breeding turkey flocks over the one-year period that were positive)
2. Horizontal bars represent 95% confidence intervals. Confidence intervals are not represented for MSs with no positive flocks (prevalence = 0). MSs with no positive flocks are ordered, from top to bottom, by the decreasing number of tested flocks

Figure SA19b. | ***Weighted prevalence*[1,2] *of* Salmonella *Enteritidis and/or* S. *Typhimurium in breeding turkey flocks, baseline survey, 2006-2007***



1. Breeding turkeys flock prevalence estimate (weighted proportion of the total number of breeding turkey flocks over the one-year period that were positive)
2. Horizontal bars represent 95% confidence intervals. Confidence intervals are not represented for MSs with no positive flocks (prevalence = 0). MSs with no positive flocks are ordered, from top to bottom, by decreasing number of tested flocks

Production turkey flocks - baseline survey

According to Commission Decision 2006/662/EC five environmental faeces samples were taken from production turkey flocks within three weeks of slaughter. In total 3,769 turkey production flocks with validated results from 22 MSs and Norway were included in the survey analyses. The distribution of fattening turkeys was less heterogeneous than that of breeding flocks. However, five MSs accounted for 79.3% of the fattening bird population, namely: France (18.7%), Germany (16.4%), Italy (16.0%), Spain (14.7%), and Poland (13.5%).

The EU prevalence of *Salmonella*-positive fattening flocks was 30.7%. The *Salmonella* prevalence in these flocks varied widely amongst MSs, from 0% to 78.5%. Three MSs and Norway reported no positive flocks. (Figure SA20a and SA21).

The map illustrates in Figure SA21 the MS-specific *Salmonella* prevalence geographically.

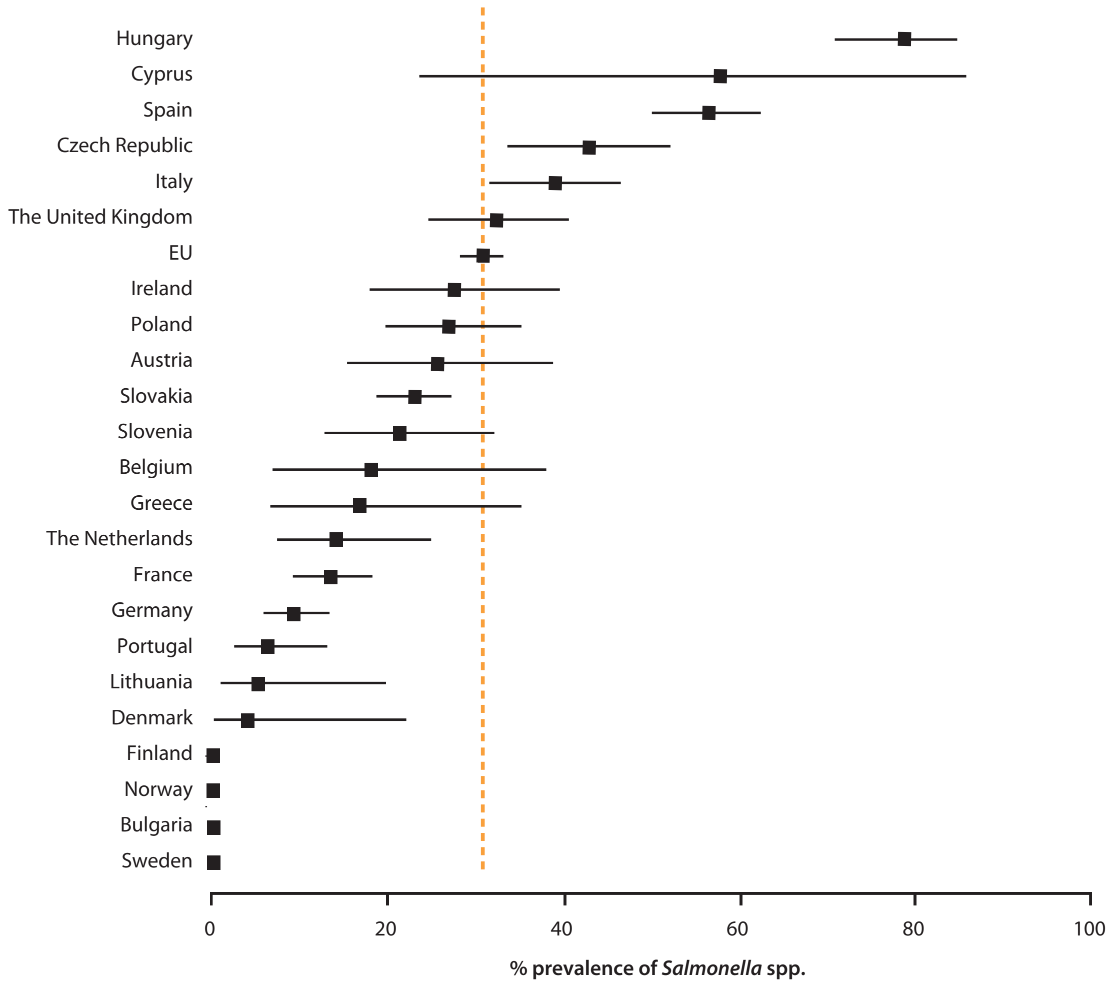
Thirteen MSs reported findings of *S.* Enteritidis and/or *S.* Typhimurium in production turkeys with an EU weighted prevalence of 3.8% of flocks with a range of 0% to 18.4% between MSs (Figure SA20b) and 19 MSs reported findings of serotypes other than *S.* Enteritidis and *S.* Typhimurium (Figure SA20c).

All 22 MSs with positive flocks provided information on serovar distribution. *S.* Bredeney was the most frequently reported serovar from production turkey flocks representing 14.6% of all isolates with Hungary and Italy accounting for 46.4% and 34.5% of the isolates, respectively (Table SA36, Figure SA22). *S.* Hadar, *S.* Derby and *S.* Saintpaul accounted for 12.0%, 9.7% and 8.9% of positive flocks, respectively. *S.* Saintpaul and *S.* Typhimurium were the serovars isolated in most MSs.

In general, the prevalence of *Salmonella* spp. in production turkey flocks was substantially higher in the baseline survey compared to routine monitoring results in MSs where both types of data were available (Figure SA23). This is probably explained by the more sensitive sampling design of the baseline survey compared to those normally used by most MSs, e.g. generally a greater number of samples from each flock and also by the increased sensitivity of the analytical method ISO 6579 annex D.

More information on the analysis of the survey results can be found in the EFSA report:
http://www.efsa.europa.eu/EFSA/efsa_locale-1178620753812_1178706574172.htm

Figure SA20a. | ***Weighted prevalence[1,2] of*** **Salmonella** ***spp. in production flocks of turkey, baseline survey, 2006-2007***



1. Production turkey flock prevalence estimate (weighted proportion of the total number of turkey production flocks over the one-year period that were positive)
2. Horizontal bars represent 95% confidence intervals. Confidence intervals are not represented for MSs with no positive flocks (prevalence = 0). MSs with no positive flocks are ordered, from top to bottom, by decreasing number of tested flocks

Figure SA21. | ***Prevalence of* Salmonella *spp. in production flocks of turkeys, baseline survey, 2006-2007***

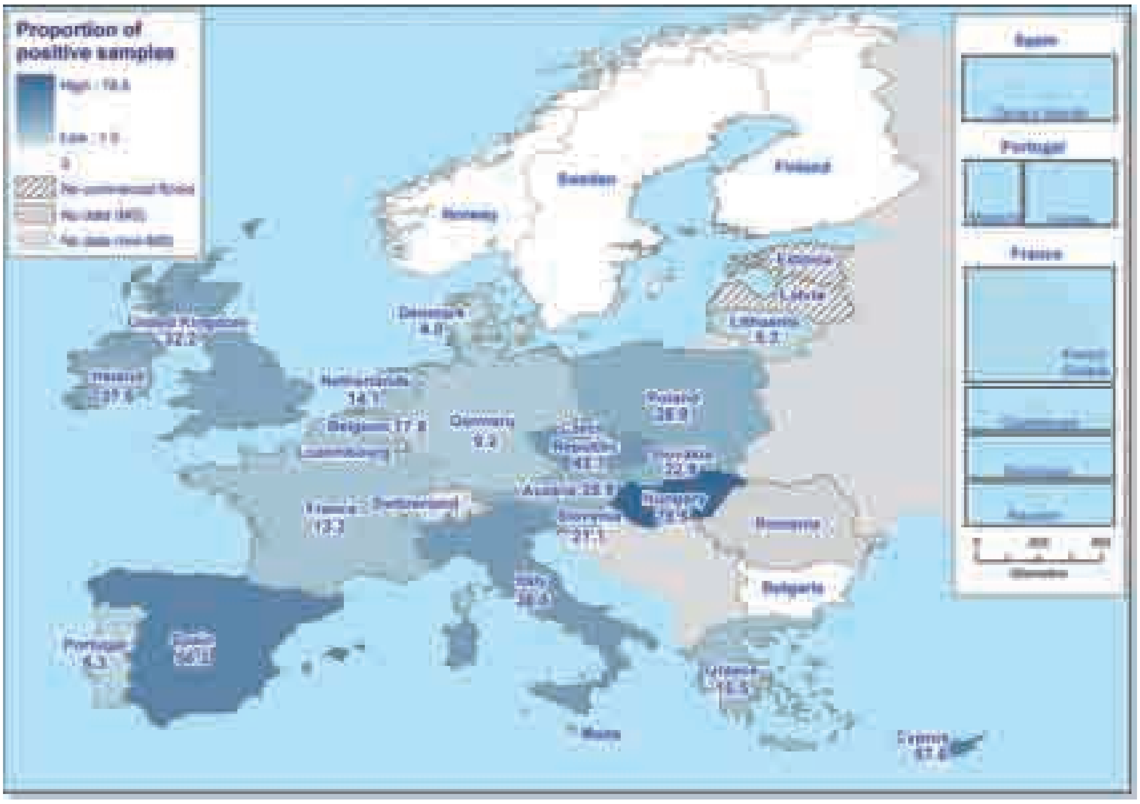
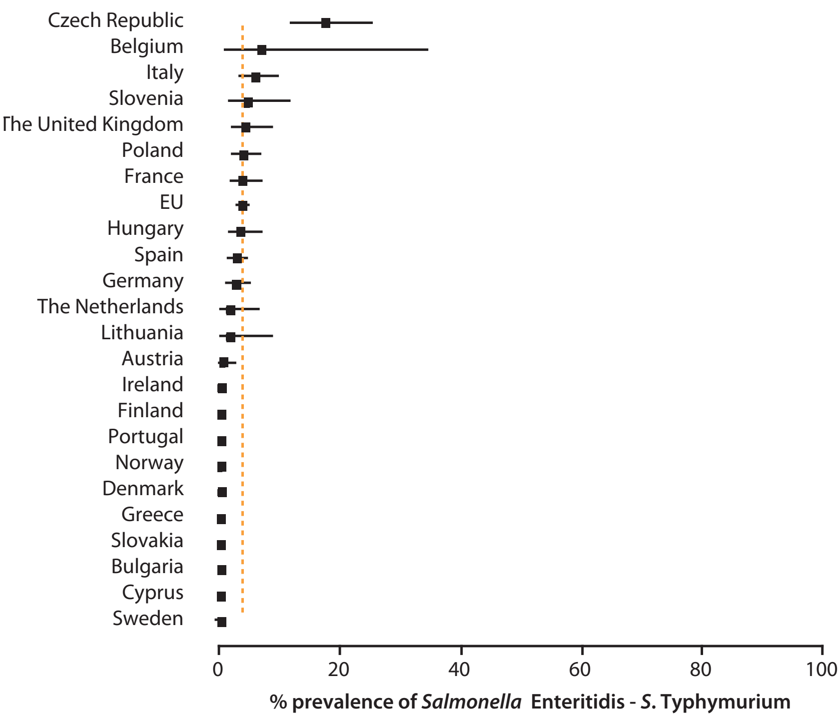
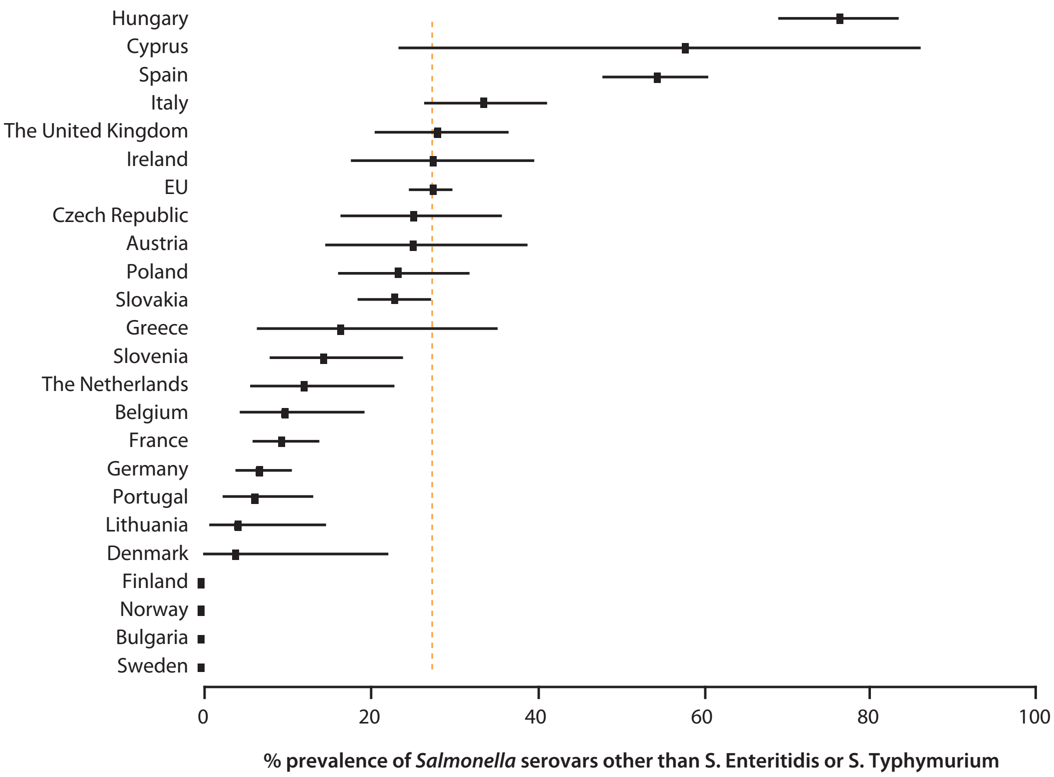


Figure SA20b . | ***Weighted prevalence[1,2] of* Salmonella *Enteritidis and* S. *Typhimurium in production flocks of turkey, baseline survey, 2006-2007***



1. Production turkeys flock prevalence estimate (weighted proportion of the total number of turkey production flocks over the one-year period that were positive)
2. Horizontal bars represent 95% confidence intervals. Confidence intervals are not represented for MSs with no positive flocks (prevalence = 0). MSs with no positive flocks are ordered, from top to bottom, by decreasing number of tested flocks

Figure SA20c. ***Weighted prevalence[1,2] of serovars other than* Salmonella *Enteritidis and S. Typhimurium in production flocks of turkey, baseline survey, 2006-2007***



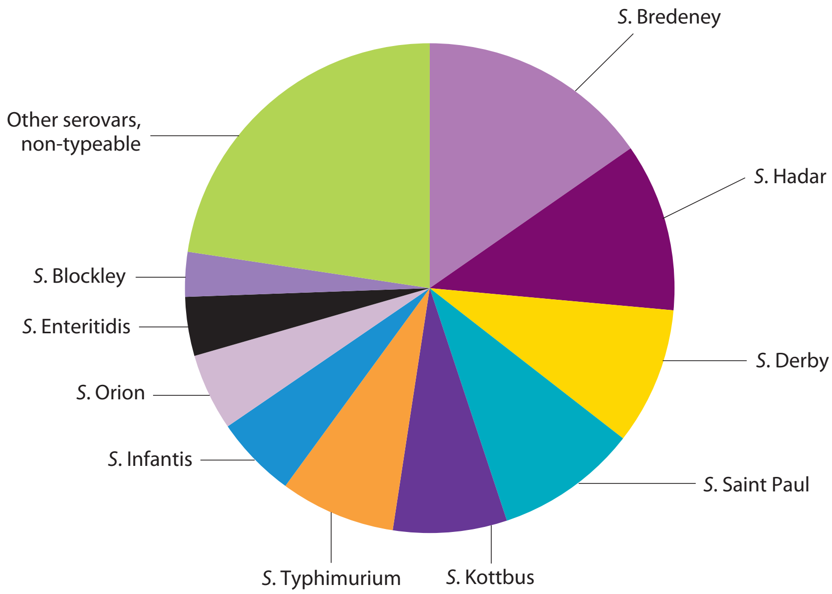
1. Production turkey flock prevalence estimate (weighted proportion of the total number of turkey flocks production over the one-year period that were positive)
2. Horizontal bars represent 95% confidence intervals. Confidence intervals are not represented for MSs with no positive flocks (prevalence = 0). MSs with no positive flocks are ordered, from top to bottom, by decreasing number of tested flocks

Table SA36. | ***Distribution of the ten most common* Salmonella *serovars in production flocks of turkeys, baseline survey 2006-2007. The serovar distribution (% flocks) was based on the number of positive flocks. Ranking was based on the sum of all reported serovars***

		% positive										
Countries	**Sum of serotyped isolates in positive flocks**	**S. Bredeney**	**S. Hadar**	**S. Derby**	**S. Saintpaul**	**S. Kottbus**	**S. Typhimurium**	**S. Infantis**	**S. Orion**	**S. Enteritidis**	**S. Blockley**	**Other serovars, non-typeable, and unspecified**
Total no. of isolates	**1,270**	**186**	**152**	**123**	**113**	**90**	**86**	**72**	**66**	**55**	**40**	**287**
Austria	38	-	26.3	2.6	21.1	-	2.6	-	-	-	2.6	44.7
Belgium	12	-	-	-	-	66.7	25.0	-	-	-	0	8.3
Bulgaria	0	-	-	-	-	-	-	-	-	-	-	-
Cyprus	11	9.1	-	-	-	-	-	-	-	-	9.1	81.8
Czech Republic	72	-	-	1.4	19.4	-	5.6	2.8	-	31.9	2.8	36.1
Denmark	1	-	-	-	-	-	-	-	-	-	-	100.0
Finland	0	-	-	-	-	-	-	-	-	-	-	-
France	49	4.1	6.1	26.5	4.1	-	16.3	-	-	12.2	-	30.6
Germany	34	-	11.8	2.9	14.7	8.8	23.5	-	-	2.9	5.9	29.4
Greece	8	-	-	-	-	12.5	-	-	-	-	-	87.5
Hungary	304	46.4	3.9	2.0	10.9	2.3	1.0	17.8	-	2.3	5.3	8.2
Ireland	91	-	-	6.6	-	2.2	-	-	71.4	-	-	19.8
Italy	110	34.5	0.9	3.6	4.5	-	14.5	-	-	-	12.7	29.1
Lithuania	4	-	50.0	-	-	-	-	-	-	25.0	-	25.0
Netherlands	18	5.6	27.8	-	33.3	-	11.1	-	-	-	-	22.2
Poland	92	-	6.5	2.2	31.5	2.2	14.1	5.4	-	9.8	4.3	23.9
Portugal	7	-	-	85.7	-	-	-	-	-	-	-	14.3
Slovakia	6	-	-	-	66.7	-	-	-	-	-	-	33.3
Slovenia	31	-	3.2	-	12.9	3.2	3.2	35.5	-	12.9	-	29.0
Spain	252	1.2	42.9	27.8	0.4	1.2	4.4	-	0.4	1.6	-	20.2
Sweden	0	-	-	-	-	-	-	-	-	-	-	-
United Kingdom	130	-	-	10.0	1.5	48.5	12.3	-	-	-	-	27.7
Proportion of positive flocks		**14.6**	**12.0**	**9.7**	**8.9**	**7.1**	**6.8**	**5.7**	**5.2**	**4.3**	**3.1**	**22.6**
Norway	0	-	-	-	-	-	-	-	-	-	-	-

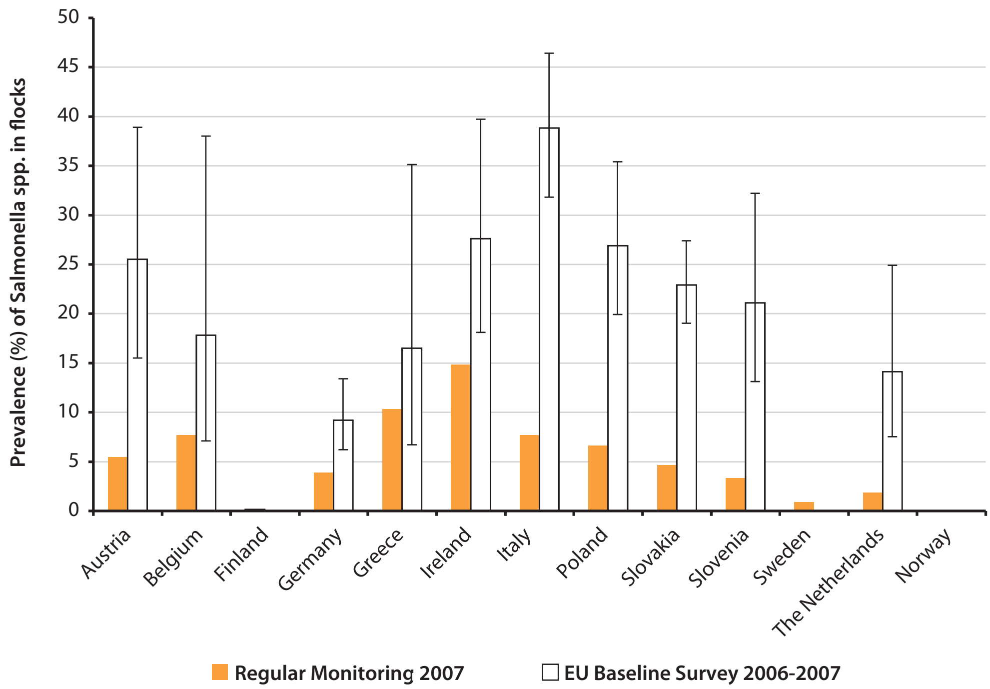
1. In some flocks more than one serovar was isolated. Each serovar was counted only once per flock

Figure SA22. | ***Distribution of the ten most common* Salmonella *serovars in production flocks of turkeys, baseline survey 2006-2007***



Note. Includes data from: AT, BE, BG, CY, CZ, DE, DK, ES, FI, FR, GR, HU, IE, IT, LT, NL, PL, PT, SK, SI, SE and UK. (N=1,270, Table SA36)

Figure SA23. | ***Comparison between the* Salmonella *spp. prevalence[1] estimates in production turkey flocks assessed by routine monitoring and in the baseline survey in 2006-2007 for 12 MSs and Norway***



1 Vertical bars represent 95% confidence intervals

Pigs

Four MSs and one non-MS reported data on the occurrence of *Salmonella* from the active bacteriological monitoring of pigs in breeding and fattening herds (other than the baseline survey) (Table SA37). At farm level, the Netherlands reported the highest herd prevalence (19.3%) whereas Estonia, Finland, Sweden and Norway did not isolate *Salmonella* from this stage of production. Three Nordic countries performed slaughterhouse monitoring of *Salmonella* by bacteriological analysis of lymph nodes all showing no or very low prevalence similar to those reported in previous years.

Seventeen MSs reported data on the *Salmonella* serovar distribution in pig herds. *S.* Typhimurium was by far the most frequent serovar (47.3%) reported, followed by *S.* Derby (10.8%) in 2007 (Table SA38). A similar distribution of serovars was reported from pig meat and the baseline survey on slaughter pigs. Several of the top serovars in pig production are frequent causes of human *Salmonella* infections in the EU.

Table SA37. | **Salmonella *in pigs from MSs with a bacteriological monitoring programme, 2005-2007***

Country		2007		2006		2005	
		N	% pos	N	% pos	N	% pos
Farm, faecal samples							
Estonia[1]	Animal	2,255	0	600	0.2	562	1.4
Finland[1]	Animal (AI station)	-	-	220	0	113	0
	Herd (breeding)	66	0	68	0	275	0
Netherlands[1]	Holding (fattening)	228	19.3	100	23.0	-	-
Sweden	Herd (breeding)	115	0	-	-	-	-
	Herd (fattening)[2]	-	-	976	0	1,271	0
Norway	Herd (breeding)	122	0	143	0	148	0
Slaughter, lymph nodes							
Finland	Animal (breeding)	3,066	0.1	3,070	0.1	3,181	0.2
	Animal (fattening)	3,166	0.1	3,262	<0.1	3,252	0.2
Italy[3]	Slaughter batch	-	-	68	58.8	40	60.0
Slovenia	Animal (fattening)	-	-	224	2.2	242	5.4
Sweden	Animal (breeding)	2,890	0.4	2,794	0.3	2,674	0.2
	Animal (fattening)	3,354	0.3	3,153	0.1	3,073	<0.1
Norway	Animal (breeding)	1,012	0	1,173	0	1,100	0
	Animal (fattening)	2,542	0	2,411	0	2,376	0

Note: Data are only presented for sample size ≥25
1. In Estonia, Finland (2006-2005, AI Station) and the Netherlands, sample material is not stated
2. In Sweden (2006), 550 pooled samples from 976 herds in the voluntary programme BIS run by the industry
3. In Italy, only the Veneto Region has a monitoring programme

Table SA38. ***Distribution of the ten most common* Salmonella *serovars in pig herds, 2007. The serovar distribution (% isolates) was based on the number of serotyped isolates, including non-typeable isolates. Ranking was based on the sum of all reported serovars***

		% positive										
Country	**No. of isolates serotyped**	**S. Typhimurium**	**S. Derby**	**S. Rissen**	**S. 4,12:i:-**	**S. Enteritidis**	**S. 1,4,5,12:i:-**	**S. 4,5,12:i:-**	**S. Infantis**	**S. London**	**S. Anatum**	**Other serovars, non-typeable, and unspecified**
Total no. of isolates	**4,504**	**2,130**	**486**	**164**	**149**	**125**	**113**	**101**	**80**	**74**	**57**	**1,025**
Austria	32	43.8	21.9	-	-	25.0	-	-	3.1	-	-	6.3
Belgium	391	65.2	7.2	1.3	-	-	-	-	3.3	-	2.0	21.0
Estonia	40	20.0	-	-	-	30.0	-	-	7.5	-	-	42.5
Finland	18	16.7	77.8	-	-	-	-	-	-	-	-	5.6
Germany	1,195	69.6	8.1	0.4	12.5	1.8	-	-	1.8	2.8	0.2	2.9
Greece	85	18.8	10.6	-	-	2.4	-	-	-	1.2	2.4	64.7
Ireland	24	87.5	4.2	-	-	-	-	-	-	-	-	8.3
Italy	684	22.5	16.2	-	-	1.3	16.4	-	-	-	-	43.6
Netherlands	447	38.5	11.0	1.3	-	3.8	-	-	5.1	4.3	-	36.0
Poland	94	21.3	10.6	-	-	31.9	-	-	4.3	-	2.1	29.8
Portugal	156	36.5	10.9	14.1	-	5.8	-	-	0.6	-	3.8	28.2
Romania	64	9.4	-	-	-	-	-	-	-	-	1.6	89.1
Slovakia	46	26.1	10.9	-	-	6.5	-	-	2.2	-	-	54.3
Slovenia	24	29.2	4.2	-	-	12.5	4.2	-	4.2	-	-	45.8
Spain	806	36.1	10.2	15.6	-	1.1	-	12.0	-	1.4	3.7	19.9
Sweden	33	57.6	-	-	-	-	-	-	36.4	-	-	6.1
United Kingdom	365	66.6	15.1	-	-	0.5	-	1.1	-	2.7	1.6	12.3
Proportion of serotyped isolates		**47.3**	**10.8**	**3.6**	**3.3**	**2.8**	**2.5**	**2.2**	**1.8**	**1.6**	**1.3**	**22.8**

Note: Data are only presented for sample size ≥10. Include both clinical and monitoring isolates, and it should be noted that there can be some overlap of isolates between the two reportings, and the sum of isolates do not correspond to the number of tested herds

For more information on reported data please refer to Level 3.

Information from the baseline survey on the prevalence of *Salmonella* in slaughter pigs, 2006-2007

From October 2006 to September 2007, an EU-wide fully harmonised *Salmonella* baseline survey was conducted in slaughter pigs. Twenty-five MSs and Norway participated in the study, only Malta and Romania did not provide information.

The survey was carried out in accordance with Regulation (EC) No 2160/2003, which requires the laying-down of an EU target for reducing *Salmonella* prevalence in slaughter pigs. Therefore, comparable data on the current prevalence in MSs is needed. Slaughter pigs were randomly selected from those slaughterhouses that together accounted for 80% of pigs slaughtered within each MS and Norway. From all participating countries ileo-caecal lymph nodes were collected for bacteriological analyses and on a voluntary base some MSs also sampled surfaces of pig carcasses by swabs. The testing of lymph nodes reflects the *Salmonella* infection of slaughter pigs that may have derived from farm level or during transport or at lairage. The detection of *Salmonella* on the surface of the pig carcass measures more the contamination during the slaughter process.

Results on carcass swabs are presented in Table SA16. Samples were taken by the competent authorities in each MS and were tested by the National Reference Laboratory (or a laboratory authorised by it) using the ISO 6579 annex D method.

Salmonella prevalence in lymph nodes of slaughter pigs (baseline study)

All participating countries collected and tested ileo-caecal lymph nodes from the selected slaughtered pigs immediately after slaughtering in the slaughterhouse. In total, 19,159 slaughter pigs were sampled and 19,071 lymph node samples collected.

EU weighted prevalence was 10.3% ranging between 0% and 29.0% in MSs (Figure SA24). Twenty-four of the 25 participating MSs isolated *Salmonella* spp. from the lymph node samples. Overall, Figure SA25 illustrates MS prevalence geographically.

Figure SA24. | ***Weighted prevalence of slaughter pigs infected with* Salmonella *spp. in lymph nodes, with 95% confidence intervals, in the EU and Norway, baseline survey, 2006-2007***

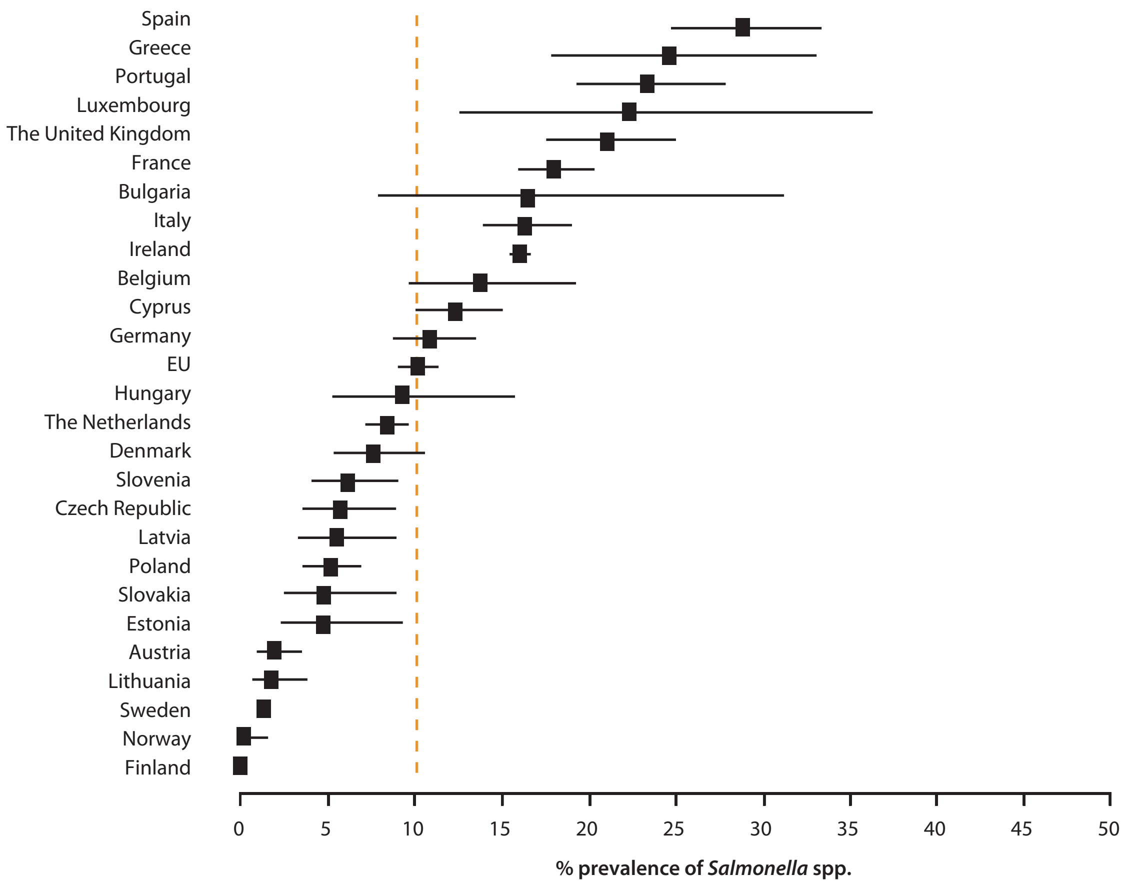
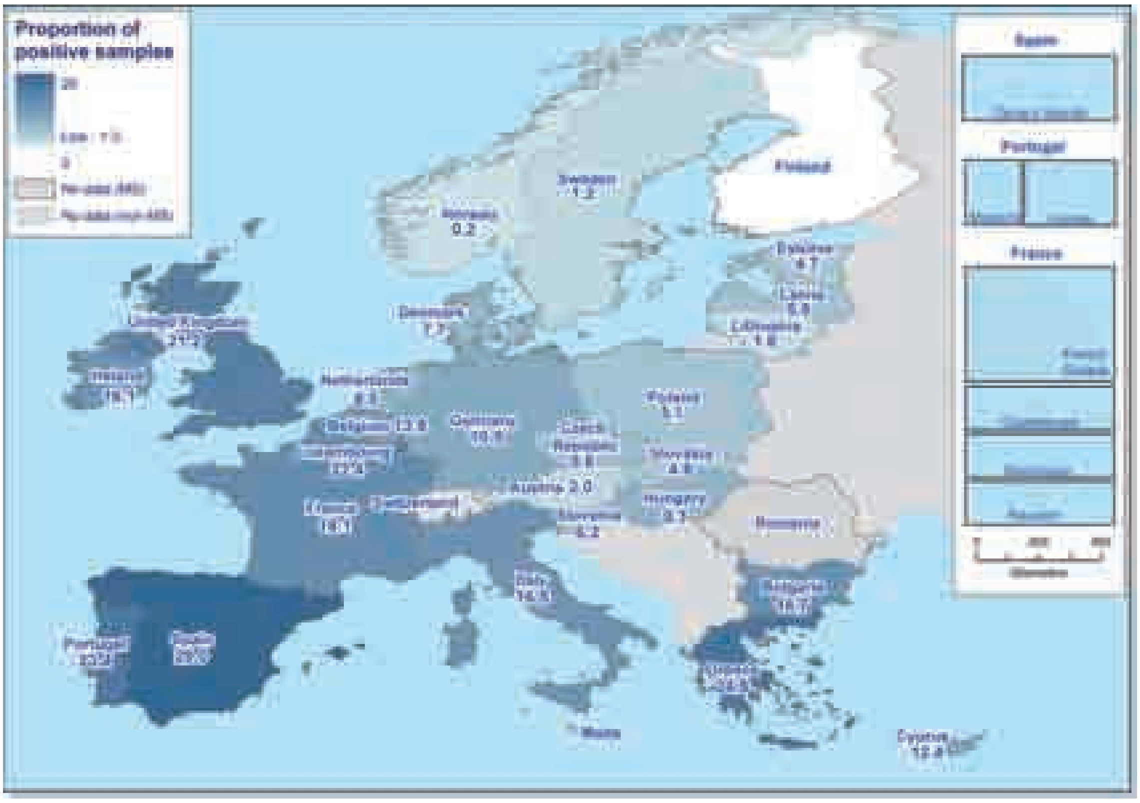


Figure SA25. | ***Prevalence of slaughter pigs infected with* Salmonella *spp. in lymph nodes, baseline survey, 2006-2007***

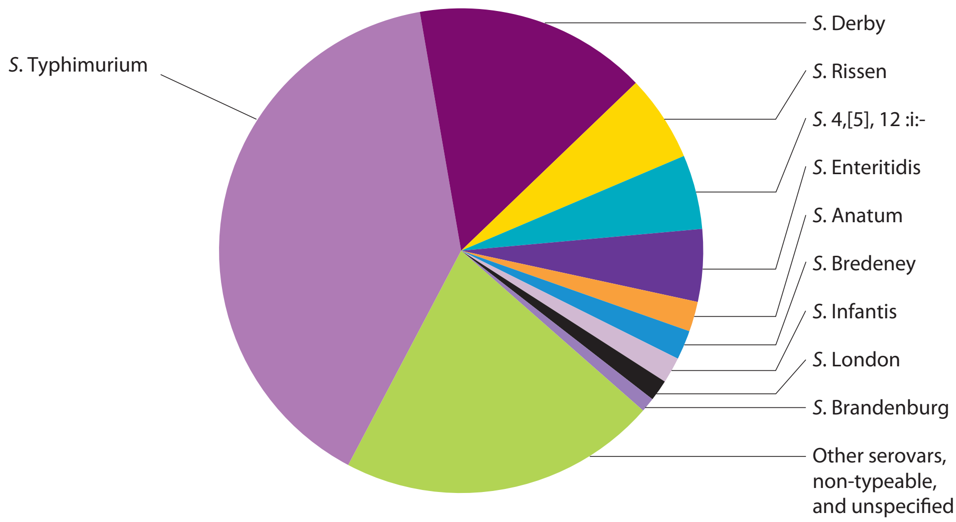


The diversity of isolated *Salmonella* serovars in slaughter pig lymph nodes was substantial and in total 87 different serovars were isolated. The five most frequently isolated *Salmonella* serovars from lymph nodes were, in decreasing order: *S.* Typhimurium, *S.* Derby, *S.* Rissen, *S.* 4,[5],12:i:- and *S.* Enteritidis (Table SA39). All these serovars, with the exception of *S.* Rissen, are frequent causes of human *Salmonella* infections in the EU. *S.* Typhimurium and *S.* Derby serovars were widespread in the Community and highly predominant in lymph nodes: *S.* Typhimurium being the most common serovar, detected in 40.0% of the *Salmonella* positive slaughter pigs and reported by all 24 MSs with positive findings. *S.* Derby also accounted for an important proportion of positive lymph nodes (14.6%) and was reported by 20 MSs (Figure SA26).

Table SA39. | ***Distribution of the ten most common* Salmonella *serovars in slaughter pig lymph node samples, baseline survey 2006-2007. The serovar distribution (% isolates) was based on the number of serotyped isolates, including non-typeable isolates. Ranking was based on the sum of all reported serovars***

		% positive										
Country	**Sum of isolates serotyped from positive animals**	***S.* Typhimurium**	***S.* Derby**	***S.* Rissen**	***S.* 4,[5],12:i:-**	***S.* Enteritidis**	***S.* Anatum**	***S.* Bredeney**	***S.* Infantis**	***S.* London**	***S.* Brandenburg**	**Other serovars, non-typeable, and unspecified**
Total no. of isolates	**2,599**	**1,039**	**380**	**151**	**128**	**126**	**63**	**51**	**49**	**33**	**31**	**548**
Austria	14	28.6	14.3	0	0	35.7	0	0	7.1	0	0	14.3
Belgium	78	57.7	9.0	1.3	0	3.8	11.5	0	0	0	0	16.7
Bulgaria	35	11.4	31.4	0	0	0	0	0	17.1	0	0	40.0
Cyprus	47	8.5	0	0	2.1	17.0	8.5	4.3	2.1	8.5	0	48.9
Czech Republic	38	31.6	18.4	0	0	26.3	0	0	2.6	2.6	0	18.4
Denmark	80	57.5	17.5	0	1.3	0	0	0	11.3	0	0	12.5
Estonia	27	25.9	0	0	0	33.3	0	0	0	0	0	40.7
Finland	0	-	-	-	-	-	-	-	-	-	-	-
France	215	41.4	35.3	0	0	0.9	0.9	1.4	2.3	0	1.9	15.8
Germany	325	55.4	8.9	0.3	9.5	3.1	0.9	0	2.5	1.2	1.2	17.0
Greece	73	16.4	12.3	0	2.7	4.1	1.4	4.1	0	1.4	1.4	56.2
Hungary	76	35.5	10.5	1.3	5.3	15.8	0	3.9	7.9	5.3	1.3	13.2
Ireland	65	61.5	13.8	0	0	1.5	0	10.8	3.1	0	0	9.2
Italy	116	10.3	33.6	0	0	1.7	3.4	0.9	0.9	0	0	49.1
Lithuania	8	75.0	0	0	0	0	0	25.0	0	0	0	0
Luxembourg	50	72.0	10.0	0	0	2.0	0	0.	0	4.0	0	12.0
Latvia	21	4.8	38.1	0	0	4.8	0	0	0	0	38.1	14.3
Netherlands	92	59.8	15.2	0	2.2	0	0	0	1.1	3.3	4.3	14.1
Poland	75	18.7	9.3	0	0	38.7	2.7	2.7	4.0	0	0	24.0
Portugal	156	36.5	10.9	14.1	10.9	5.8	3.8	0	0.6	0	0	17.3
Slovakia	30	13.3	16.7	0	0	10.0	0	0	3.3	0	0	56.7
Slovenia	27	11.1	7.4	0	0	25.9	0	0	3.7	0	0	51.9
Spain	806	36.1	10.2	15.6	12.0	1.1	3.7	3.5	0	1.4	1.1	15.3
Sweden	6	66.7	0	0	0	0	0	0	33.3	0	0	0
United Kingdom	139	61.9	20.9	0	2.9	1.4	1.4	0	0	2.2	0	9.4
Proportion of serotyped isolates		**40.0**	**14.6**	**5.8**	**6.1**	**4.8**	**2.4**	**2.0**	**1.9**	**1.3**	**1.2**	**19.9**
Norway	1	100.0	0	0	0	0	0	0	0	0	0	0

Figure SA26. | ***Distribution of the ten most commonly reported* Salmonella *serovars*[1] *in slaughter pig lymph node samples, baseline survey 2006-2007***



Note: Includes data from: AT, BE, BG, CY, CZ, DE, DK, EE, ES, FI, FR, GR, HU, IE, IT, LT, LU, LV, NL, PL, PT, SK, SI, SE and UK (N=2,599, Table SA39)
1. Other serovars include non-typeable isolates

Cattle

Data from active bacteriological monitoring of cattle herds were reported by Estonia, Finland, Norway and Sweden (Table SA40). In all four countries, no or a very low prevalence of *Salmonella* in herds or in animals at slaughter were reported. This is similar to reports from previous years.

S. Typhimurium was the most commonly isolated serovar followed by *S.* Enteritidis and *S.* Dublin in these countries (Table SA41). However, a wide range of different serovars and unspecified serovars were also reported.

For more information on reported data please refer to Level 3.

Table SA40. | ***Salmonella in cattle from countries running a bacteriological monitoring programme, 2005-2007***

		2007		2006		2005	
Country		**N**	**% pos**	**N**	**% pos**	**N**	**% pos**
Farm, faecal samples							
Estonia[1]	Animal (clinical)	247	1.6	927	7.3	-	-
	Animal (monitoring)	1,302	7.7	1,213	0.1	1,581	0.9
Finland	Herd (bulls)	281	0.4	205	0.0	256	0.0
	Herd[4]	27	51.9	39	23.1	30	26.2
Prior to slaughter, faecal samples							
Italy[2]	Slaughter batch[3]	-	-	67	4.5	30	6.7
Slovenia	Animal	199	1.0	236	1.3	232	0.4
Slaughter, lymph nodes							
Finland	Animal	2,930	0.1	3,022	<0.1	3,003	0.1
Sweden[5]	Animal	3,853	0.1	3,518	<0.1	3,297	<0.1
Norway	Animal	2,218	<0.1	2,317	0.0	2,209	0.1

Note: Data are only presented for sample size ≥25
1. In Estonia, faecal samples from 5-10 animals were pooled for investigation
2. In Italy, only the Veneto Region has a monitoring programme
3. In Italy, faecal samples from 15 animals per batch are examined
4. In Finland, sampling based on the suspicion of *Salmonella* infection due to clinical symptoms, pathological findings, outbreak investigation or positive findings in lymph nodes at slaughter
5. In Sweden 23 suspected herds were sampled, *Salmonella* was detected in 13 herds

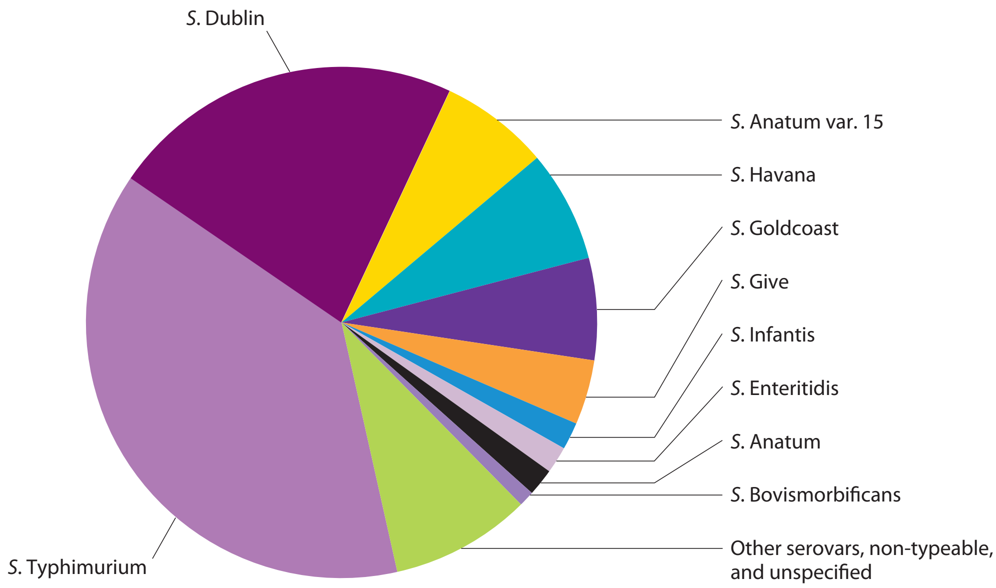
The distribution of the ten most common serovars in cattle herds is shown in Table SA41 and in Figure SA27. *S.* Typhimurium covers 38.2% of the isolates, whereas the next most commonly reported serovar was *S.* Dublin.

Table SA41. ***Distribution of the ten most common* Salmonella *serovars in cattle herds, 2007. The serovar distribution (% isolates) was based on the number of serotyped isolates, including non-typeable isolates. Ranking was based on the sum of all reported serovars***

		% positive										
Country	**No. of isolates serotyped**	**S. Typhimurium**	**S. Dublin**	**S. Anatum var. 15**	**S. Havana**	**S. Goldcoast**	**S. Give**	**S. Infantis**	**S. Enteritidis**	**S. Anatum**	**S. Bovismorbificans**	**Other serovars, non-typeable, and unspecified**
Total no. of isolates	**4,424**	**1,692**	**971**	**314**	**308**	**293**	**178**	**77**	**73**	**71**	**59**	**388**
Austria	21	14.3	33.3	-	-	-	-	-	9.5	4.8	-	38.1
Belgium	80	20.0	66.3	-	-	-	-	1.3	-	-	-	12.5
Denmark	44	36.4	52.3	-	-	-	-	-	-	-	-	11.4
Estonia	14	42.9	14.3	-	-	-	-	-	14.3	-	-	28.6
Finland	161	96.3	-	-	-	-	-	-	-	-	-	3.7
Germany	2,817	45.4	3.8	11.1	10.9	10.3	6.3	2.6	1.8	1.0	2.1	4.6
Ireland	171	16.4	82.5	-	-	-	-	-	0.6	-	-	0.6
Italy	67	55.2	-	-	-	-	-	-	-	-	-	44.8
Netherlands	107	22.4	63.6	-	-	-	-	-	3.7	-	-	10.3
Romania	11	27.3	-	-	-	-	-	-	-	9.1	-	63.6
Slovakia	21	52.4	14.3	-	-	-	-	-	33.3	-	-	-
Spain	30	13.3	6.7	-	-	-	-	3.3	-	6.7	-	70.0
Sweden	23	30.4	34.8	-	-	-	-	4.3	-	-	-	30.4
United Kingdom	857	11.9	65.1	0.1	-	0.4	0.1	-	0.6	4.4	-	17.4
Proportion of serotyped isolates		**38.2**	**21.9**	**7.1**	**7.0**	**6.6**	**4.0**	**1.7**	**1.7**	**1.6**	**1.3**	**8.8**
Norway	85	87.1	11.8	-	-	-	-	-	-	-	-	1.2

Note: Data are only presented for sample size ≥10. Include both clinical and monitoring isolates, and it should be noted that there can be some overlap of isolates betwen the two reporings, and the sum of isolates do not correspond to the number of tested herds

Figure SA27. | ***Distribution of the ten most common* Salmonella *serovars in cattle herds, 2007***



Note: Includes data from: AT, BE, DE, DK, EE, ES, FI, IE, IT, NL, RO, SK, SE and UK (N=4,424, Table SA41)

Other animal species

Other poultry species, such as guinea fowl, ostriches, partridges, quails, and pheasants, as well as wild birds, were tested for *Salmonella* in some MSs. Results show that all types of poultry can be infected with *Salmonella* and several serovars may be present even though there was a tendency for *S.* Typhimurium to be most frequently isolated, especially from wild birds.

An overview of the reported data is presented in Level 3.

The reported data on *Salmonella* in sheep, goats and solipeds were primarily results from diagnostic submissions. In several countries, *Salmonella* was detected in sheep (Austria, Estonia, Germany, Greece, Ireland, Italy, the Netherlands, Portugal, Slovenia, Spain, Sweden, the United Kingdom and Norway) goats (Austria, the Czech Republic, Germany, Italy, Spain and the United Kingdom) and solipeds (Germany, Ireland, Italy, the Netherlands, Portugal, Slovakia, Sweden, the United Kingdom and Norway). In Norway, only the specific serotype *S. enterica* subsp. *diarizonae* 61:(k):1,5,(7) was isolated from 12 (25.5%) of 47 sheep samples collected as a part of the Norwegian *Salmonella* control programme. Italy reported data from monitoring programmes on sheep and goats; 5% of 480 holdings and 4.7% of 5,420 individual sheep were *Salmonella* positive and 1.7% of 120 holdings and 0.4% of 226 individual goats were *Salmonella* positive. *S.* Abortusovis was detected in 14.8% of the positive samples from sheep and in one sample out of 21 in solipeds. In two out of 12 samples from sheep, *S.* Dublin was found; the remaining positive samples were not specified.

Pets, in particular cats and dogs, have been investigated for *Salmonella* in several countries with sporadic findings of *Salmonella*. A relatively high proportion of *Salmonella* positive samples from reptiles, snakes and turtles was observed, however these samples are based on suspected clinical cases.

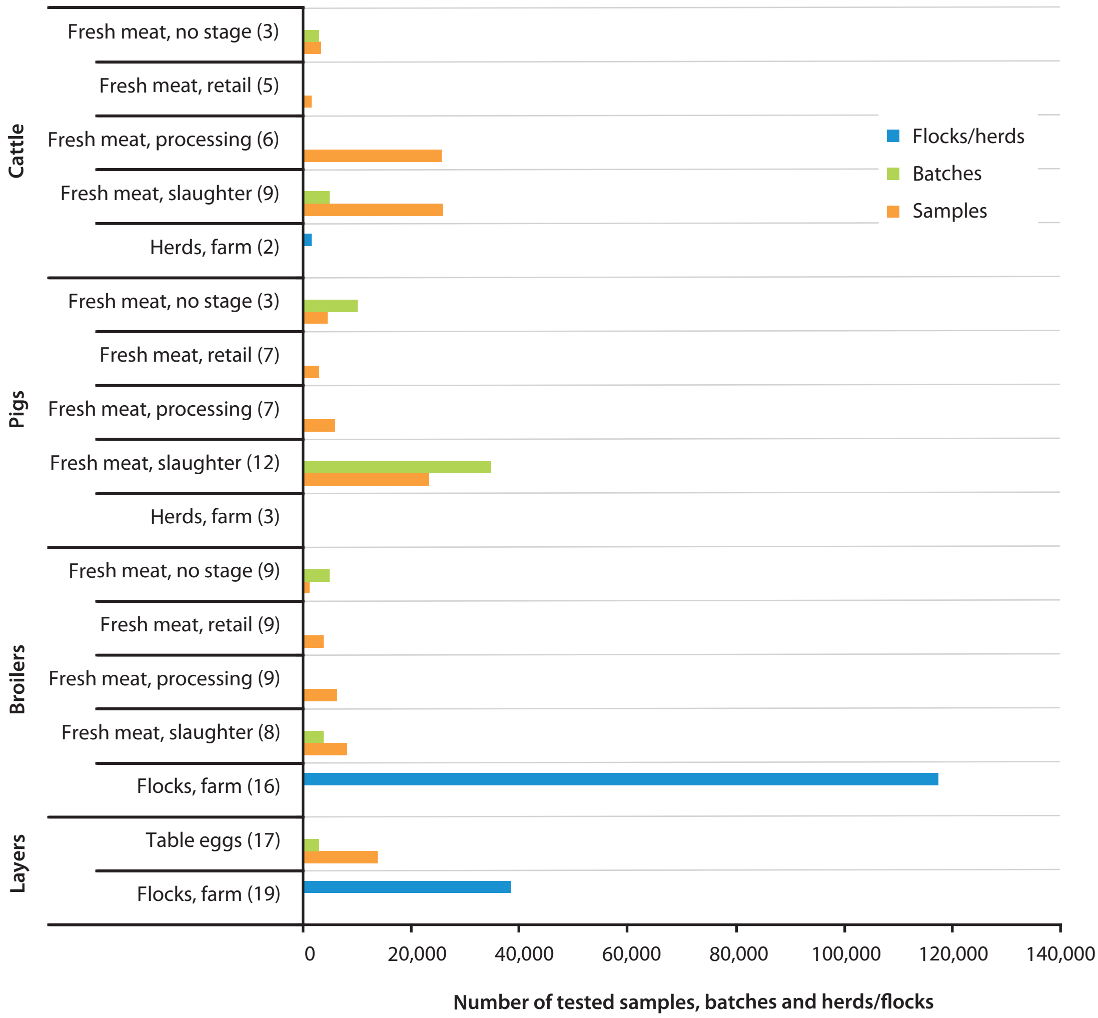
An overview of the reported data is presented in Level 3.

3.1.4 | General consideration

During the past few years the quality and validity of reported data on the occurrence of *Salmonella* in food and animals has improved. This is due to the efforts of MS reporters and the implementation of the Community *Salmonella* criteria, multi-annual control plans and the *Salmonella* control programmes. Figure SA28 illustrates the number of reported data in 2007.

However, data demonstrate a substantial variation among countries in the occurrence of *Salmonella* in different food categories and animal species (Figure SA29). The variation is caused partly by differences in sampling and testing schemes and also by true differences in the occurrence of *Salmonella* between countries. Similar great variations between MS specific *Salmonella* prevalence were also observed in the EU-wide baseline surveys in laying hens, broilers, turkeys and slaughter pigs.

Figure SA28. | ***The number of tested samples, batches and herds/flocks at different sampling levels[1] for MSs reporting more than 25 units per sampling level, 2007. Number of MSs in brackets***



Note: Include table eggs tested at packing centres and retail as well as data where no level of sampling was indicated

1. Data where level of sampling were not reported is also included

Figure SA29. | ***Proportions of* Salmonella *positive samples, by animal species and food category within the EU, 2007. Each point representing a MS observation***

Note: Data are only presented for sample size ≥25

1. Include table eggs tested at packing centres and retail as well as data where no level of sampling was indicated

3.1.5 | **Discussion**

In 2007, salmonellosis was again the second most often reported zoonotic disease in humans in the EU, following campylobacteriosis. But, whereas the numbers of reported campylobacteriosis cases continue to increase in the Community, the notification rate of salmonellosis cases is decreasing, which is demonstrated by the statistically significant trend observed since 2004 at EU level. The reasons for this improved situation is likely to be caused by the intensified control of *Salmonella* in animal populations, particularly in poultry, and better hygiene throughout the food chain.

2007 was the first year when the new *Salmonella* control programmes in breeding flocks of *Gallus gallus* were implemented in accordance with the Regulation (EC) No 2160/2003, and MSs reported data from the programmes. The aim of these programmes is to meet the *Salmonella* targets laid down by the Regulation (EC) No 1003/2005. The target for *S.* Enteritidis, *S.* Hadar, *S.* Infantis, *S.* Typhimurium and *S.* Virchow is a reduction to 1% or less in adult breeding flocks comprising at least 250 birds by 31 December 2009. The data from 2007 showed that already 15 MSs reported a prevalence of the five target serovars lower than the target. Nine MSs reported prevalence of the five serovars from 1.1% to 26.3% during the production period of breeding flocks indicating that they still need to work to reach the target level. Because of the more intensive control programmes for breeding flocks in 2007, results were not fully comparable with data from previous years. However, the observations indicate that the improved *Salmonella* status in parent-breeding flocks observed from 2005 to 2006 continued in 2007.

Salmonella in table eggs is mainly monitored through surveillance of layer flocks. A total of 4.3% of the tested laying hen flocks were found infected during 2007 in reporting MSs, an overall occurrence slightly higher than in the two previous years. In addition some MSs, typically those having a higher prevalence in laying hen flocks, analysed table eggs for *Salmonella* and overall 0.8% of the tested units were found positive, which is the same level as in 2006.

For broilers, the observed proportion of *Salmonella* positive flocks in 2007 remained approximately at the same level as in 2006 (3.7% vs. 3.4%) in MSs having a control or monitoring programme. Analyses of different types of broiler meat for *Salmonella* is very intensive in reporting MSs and overall 5.5% of samples from fresh broiler meat tested positive for *Salmonella*. *Salmonella* was also observed in 6.8% the non-ready-to-eat products of broiler meat and in 0.2% of ready-to-eat (RTE) products at EU level.

A number of MSs reported data on *Salmonella* in turkey flocks, and a few MSs also in ducks and geese. The reported *Salmonella* prevalence in production turkey flocks was 7.8% which is clearly less than the observed mean EU prevalence of 30.7% in production turkey flocks in the *Salmonella* baseline survey, carried out in 2006 to 2007. This shows that the routine monitoring programmes in place are often less sensitive in detecting *Salmonella* than the baseline survey. In duck and geese flocks, *Salmonella* was reported in 10.6% and 9.3% of the flocks, respectively. The *Salmonella* contamination level of 6.8% in non-RTE turkey meat was at the same level as found in broiler meat in 2007.

Only few MSs had a control or monitoring programme for *Salmonella* in pig herds or slaughter pigs. However, in the EU-wide baseline survey in slaughter pigs, the EU weighted *Salmonella* prevalence in lymph nodes of slaughter pigs was 10.3%, and it varied widely among MSs from 0% to 29.0%. In the same survey the EU weighted prevalence on pig carcasses was 8.3% ranging from 0% to 20.0% in MSs. In the annual zoonoses reporting only 1.1% of fresh pig meat was found positive in 2007 at EU level. However, this is biased due to the great number of samples reported by the Nordic MSs that have low *Salmonella* prevalence. Overall, these results indicate that pig meat is likely to be one of the important sources for human *Salmonella* infections in EU.

Few MSs reported data on *Salmonella* in cattle, with mostly low prevalence, and this applied to bovine meat, too.

Substantial numbers of dairy products, including cheeses, were tested by MSs in 2007, and *Salmonella* was very rarely found in these products. Many MSs also carried out investigations in different types of fruit and vegetables in 2007, maybe prompted by recently reported outbreaks linked to these products. However, *Salmonella* was only seldom detected in these investigations (in general <0.1% at EU level). Nevertheless, Sweden and Germany found 1.5% and 2.2% positive samples in sprouted seeds.

When comparing reported results to the Community provisions on *Salmonella* criteria, the results exceeding the criteria were most often observed in minced meat and meat preparations, and in particular poultry meat. In the other food categories covered by the criteria, exceeding the criteria was relatively rarely detected and at the same levels as in 2006. The findings in minced meat and meat preparations show that, even though the consumer risk of eating raw meat is well documented, MSs as a whole do not, at least with success, manage to provide raw RTE meat products with higher consumer safety than for regular minced meat in general.

Sources of infections

Overall, reported data from 2007 underline the generally accepted conclusion that the main sources of *Salmonella* infections in humans are from different types of meat and eggs. Relatively high occurrences are reported from raw meat (non-ready-to-eat) whereas occurrence in RTE-products is significantly lower. In recent years an increased attention has been given to investigate *Salmonella* in fruit and vegetables as a result of several international *Salmonella* outbreaks caused by these types of foodstuffs e.g. lettuce, tomatoes and basil. An increased number of countries are reporting data on such investigations but *Salmonella* has only been detected in very few instances and generally at very low levels.

Serovar and phage type distribution in foodstuffs and food producing animals can, in comparison to the distribution in human cases, provide initial information as to the significance of different sources of human infections. Only limited results on serovars (and phage types) are reported as part of routine surveillance and therefore only weak conclusions can be drawn. However, recently, several harmonised baseline surveys have been conducted in different populations of food production animals and this has procured more detailed information on serovar distributions (Table SA42). Together, all data contribute to source attribution of human salmonellosis, which will be investigated in detail in the coming year by EFSA.

S. Enteritidis was the most frequent cause of human salmonellosis at Community level. In general, this serovar was also the most frequently isolated serovar from poultry meat and especially in table eggs, whereas it is less commonly found from pigs and cattle and products thereof. The second most prevalent serovar in humans was *S.* Typhimurium. This serovar was the most frequently isolated serovar in pigs (and cattle) and products thereof and was also among the top three serovars isolated from broilers and table eggs. *S.* Derby is common in the turkey and pig production and, to some extent, in the cattle production.

Some single serovars may be seen as animal species-indicators. *S.* Enteritidis is, as mentioned above, closely related to poultry, whereas *S.* Dublin is almost exclusively related to cattle production. However, human cases caused by *S.* Dublin constitute less that 0.1% even though this serovar is known to be highly pathogenic.

Table SA42. **Distribution of Salmonella serovars in human isolates (TESSy, 2007) and isolates from EU baseline surveys in broilers[1], layers[2], turkeys[3] and slaughter pigs[4]**

Salmonella serovar	Humans (N=138,707)	Broilers (N=1,448)	Laying hen flocks (N=1,486)	Turkeys fattening flocks (N=1,084)	Slaughter pigs (N=2,600)
S. Enteritidis	82,251	538	899	55	126
S. Typhimurium	21,136	65	123	86	1,040
S. Infantis	1,331	295	171	72	49
S. Virchow	1,106	30	41	11	7
S. Newport	771	8	11	33	24
S. Stanley	669	0	0	0	0
S. Hadar	488	59	53	152	8
S. Derby	475	13	14	123	380
S. Kentucky	435	44	12	1	0
S. Agona	421	16	38	31	28

Note: The selected serovars are the ten most common serovars reported in humans 2007. N=total number of positive units

1. Report of the Task Force on Zoonoses Data Collection on the Analysis of the baseline survey on the prevalence of *Salmonella* in holdings of broiler flocks of *Gallus gallus*, Part B, The EFSA Journal (2007) 101, 1-86
2. Report of the Task Force on Zoonoses Data Collection on the Analysis of the baseline study on the prevalence of *Salmonella* in holdings of laying hen flocks of *Gallus gallus*, The EFSA Journal (2007) 97
3. Report of the Task Force on Zoonoses Data Collection on the Analysis of the baseline survey on the prevalence of *Salmonella* in turkey flocks. Part A, The EFSA Journal (2008) 134, 1-91
4. Report of the Task Force on Zoonoses Data Collection on the analysis of the baseline survey on the prevalence of *Salmonella* in slaughter pigs, Part A, The EFSA Journal (2008) 135, 1-111

Campylobacter | 3.2.

Campylobacteriosis in humans is caused by thermophilic *Campylobacter* spp. Typically, the infective dose of these bacteria is low. The species most commonly associated with human infection are *C. jejuni* followed by *C. coli*, and *C. lari*, but other *Campylobacter* species are also known to cause human infection.

The incubation period in humans averages from two to five days. Patients may experience mild to severe symptoms, with common clinical symptoms including watery, sometimes bloody diarrhoea, abdominal pain, fever, headache and nausea. Usually, infections are self-limiting and last only a few days. Infrequently, extra-intestinal infections or post-infection complications such as reactive arthritis and neurological disorders occur. *C. jejuni* has become the most recognised antecedent cause of Guillain-Barré syndrome, a polio-like form of paralysis that can result in respiratory and severe neurological dysfunction and even death.

Thermophilic *Campylobacter* spp. are widespread in nature. The principal reservoirs are the alimentary tracts of wild and domesticated birds and mammals. They are prevalent in food animals such as poultry, cattle, pigs and sheep; in pets, including cats and dogs; in wild birds and in environmental water sources. Animals, however, rarely succumb to disease caused by these organisms.

The bacteria can readily contaminate various foodstuffs, including meat, raw milk and dairy products, and less frequently fish and fishery products, mussels and fresh vegetables. Among sporadic human cases, contact with live poultry, consumption of poultry meat, drinking water from untreated water sources, and contact with pets and other animals have been identified as the major sources of infection. Raw milk and contaminated drinking water have been causes of larger outbreaks.

Table CA1 presents the countries reporting data for 2007.

Table CA1. | ***Overview of countries reporting data for* Campylobacter*, 2007***

Data	Total number of MSs reporting	Countries
Human	24	**All MSs** except GR, PT, RO **Non-MSs:** IS, LI, NO
Food	19	**MSs:** AT, BE, CZ, DK, EE, FR, DE, HU, IE, IT, LV, LU, NL, PT, RO, SK, ES, SI, SE **Non-MSs:** NO, CH
Animal	22	**All MSs** except BE, BG, CY, MT, RO **Non-MSs:** NO, CH
Species	21	**All MSs** except BE, BG, CY, NL, MT, PL **Non-MSs:** NO, CH

Note: In the food and animal chapters, only countries reporting 25 samples or more have been included for analyses.

In the following chapters thermophilic *Campylobacter* spp. will be referred to as *Campylobacter*.

3.2.1 | Campylobacteriosis in humans

In 2007, *Campylobacter* continued to be the most commonly reported gastrointestinal bacterial pathogen in humans in the EU, as in the previous three years (Table CA2). The number of reported confirmed human campylobacteriosis cases in the EU increased from a total of 175,561 in 2006 to 200,507 in 2007, i.e. an increase of almost 25,000 cases. However, the EU notification rates decreased from 47.1 / 100,000 in 2006 to 45.2 / 100,000 in 2007. A probable explanation for this is that two new MSs with large populations entered the EU in 2007 with only a low number of campylobacteriosis cases reported. In addition, Italy reported cases in 2007 for the first time in several years. Campylobacteriosis is not notifiable in Italy and therefore only cases identified through laboratories were reported and this may not be truly representative of the country.

With the exception of Estonia, Hungary, Lithuania, the Netherlands and Spain, all EU countries reported an increase in the number of confirmed cases in 2007 compared to 2006. Germany and the United Kingdom reported the largest increases in confirmed cases from 2006 to 2007, 27.0% (14,072 cases more) and 10.9% (5,681 cases more), respectively.

Figure CA1 illustrates the geographical distribution of the reported notification rates in the EU. The variation in the notification rates of campylobacteriosis cases among reporting MSs is large and the different sensitivities of the reporting systems and microbiological methods employed by MSs may have influenced these figures; consequently comparison between countries should be carried out with caution. Comparison between years within a country is generally more valid.

No statistically significant EU trend was observed in the notification rates of reported cases of human campylobacteriosis between 2004 and 2007 (Figure CA2a). Altogether, 17 MSs reported consistently during these years and were thus included in the analysis. Statistically significant and increasing trends in campylobacteriosis notification rates were observed in Poland and Slovakia, while a statistically significant and decreasing trend was observed in Hungary, from 2004 to 2007 (Figure CA2b). The increase in Poland could be due to the recent introduction of campylobacteriosis notification (as of 2004) and an increasing number of laboratories performing *Campylobacter* diagnosis, though routine diagnosis is still limited to certain regions of the country.

Table CA2. | ***Reported campylobacteriosis cases in humans 2003-2007[1] and notification rates for 2007***

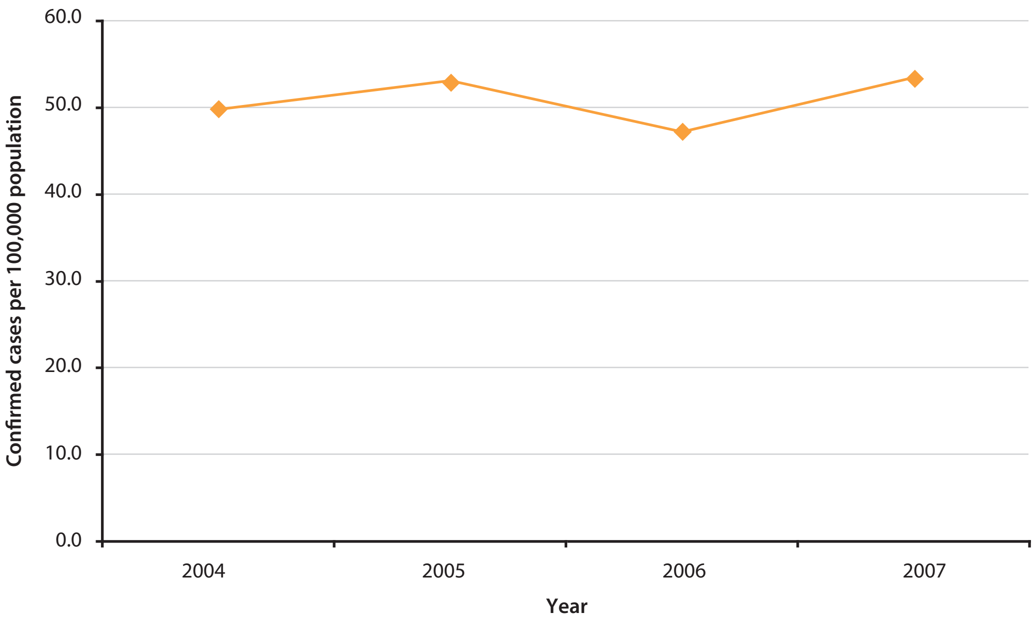
Country	2007				2006	2005	2004	2003
	Report Type [2]	Cases	Confirmed Cases	Confirmed cases/100,000	Confirmed Cases		Cases	
Austria	C	5,821	5,821	70.1	5,020	5,065	5,365	3,926
Belgium	C	5,906	5,906	55.8	5,771	6,879	6,716	6,556
Bulgaria[3]	A	38	38	0.5	0	-	-	-
Cyprus	C	17	17	2.2	2	-	-	-
Czech Republic	C	24,252	24,137	234.6	22,571	30,268	25,492	-
Denmark	C	3,868	3,868	71	3,239	3,677	3,724	3,537
Estonia	C	114	114	8.5	124	124	124	98
Finland	C	4,107	4,107	77.8	3,439	4,002	3,583	3,190
France	C	3,058	3,058	4.8	2,675	2,049	2,127	1,997
Germany	C	66,107	66,107	80.3	52,035	62,114	55,796	47,876
Greece	–[4]	-	-	-	-	-	392	1
Hungary	C	5,856	5,809	57.7	6,807	8,288	9,087	
Ireland	C	1,891	1,885	43.7	1,810	1,801	1,710	1,568
Italy	A	676	676	1.1	-	-	-	1
Latvia	C	0	0	0.0	-	-	-	1
Lithuania	A	564	564	16.7	624	694	797	617
Luxembourg	C	345	345	72.5	285	194	-	-
Malta	C	91	91	22.3	54	91	-	-
Netherlands[5]	C	3,462	3,289	38.6	3,186	3,761	3,273	2,805
Poland	C	192	192	0.5	156	47	24	
Portugal	–[4]	-	-	-	-	-	-	-
Romania[3]	–[4]	-	-	-	-	-	-	-
Slovakia	C	3,421	3,380	62.7	2,718	2,204	1,691	1,195
Slovenia	C	1,127	1,127	56.1	944		1,063	890
Spain	C	5,055	5,055	11.4	5,889	5,513	5,958	6,048
Sweden	C	7,106	7,106	78	6,078	5,969	6,169	7,149
United Kingdom	C	57,815	57,815	95	52,134	52,686	50,388	52,126
EU Total		**200,889**	**200,507**	**45.2**	**175,561**	**195,426**	**183,479**	**139,581**
Iceland	C	93	93	30.2	117	128	-	-
Liechtenstein	C	14	0	0	10	-	-	-
Norway	C	2,836	2,836	60.6	2,588	2,631	-	-
Switzerland	C	6,038	6,038	79.5	5,429	5,259	5,584	5,692

1. Number of confirmed cases for 2005-2007 and number of total cases for 2003-2004
2. A: aggregated data report; C: case based report; –-: no report
3. EU membership began in 2007
4. No surveillance system exists
5. Sentinel system; notification rates calculated on estimated coverage, 52%

Figure CA1. | ***Campylobacteriosis notification rates in humans in the EU (per 100,000 population), 2007***

Note: A graduate colour ramp with class interval of 0.1 was used for the map symbology

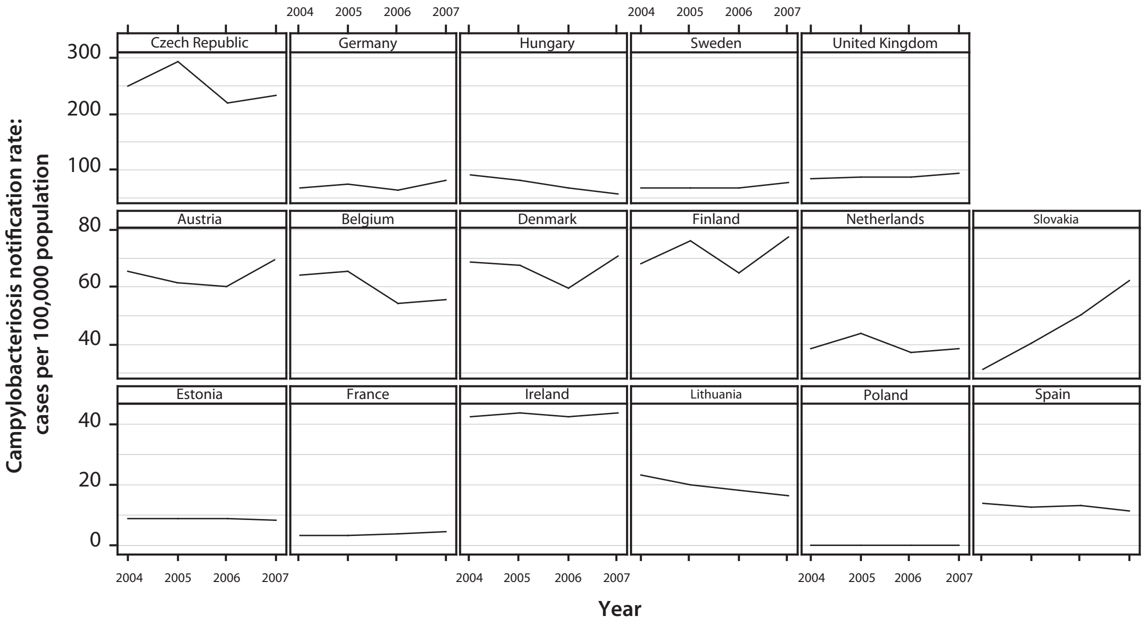
Figure CA2a. | ***Notification rates of reported confirmed cases of human campylobacteriosis in the EU, 2004-2007[1]***



Source for EU trend: Austria, Belgium, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Lithuania, Netherlands, Poland, Slovakia, Spain, Sweden, United Kingdom

1. Includes total cases for 2004 and confirmed cases from 2005-2007

Figure CA2b. | ***Notification rates of reported confirmed cases of human campylobacteriosis in MSs (cases per 100,000 population), 2004-2007***



Note: MSs have been ranked according to the maximum value of the notification rate. A unique scale is used for MSs shown in the same row but scales differ among rows

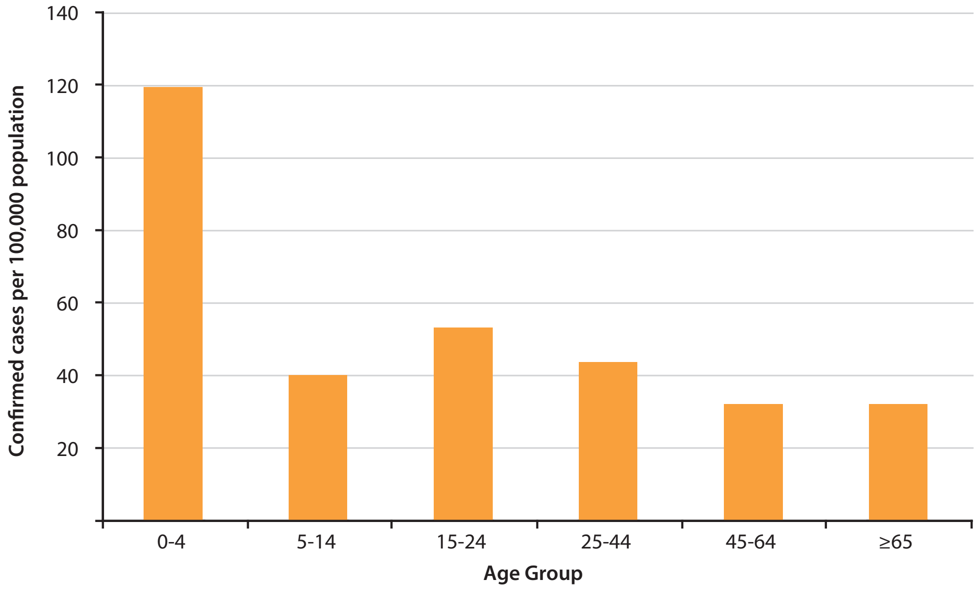
In 2007, a smaller proportion of confirmed campylobacteriosis cases in the EU were reported as imported (6.8%) compared to 2006 (8.5%), and a smaller proportion were reported with unknown origin in 2007 (31.6%) compared to 2006 (38.1%) (Table CA3). Conversely, a larger proportion of cases in 2007 were acquired domestically (61.6%) compared to the previous year (54.0%). As in 2006, Sweden, Finland, Norway and Iceland reported the highest proportions of imported cases. In contrast, Austria, Cyprus, the Czech Republic, Estonia, Germany, Hungary, Lithuania, Malta, the Netherlands, Poland, Slovakia and Spain reported that the majority of confirmed cases were domestically acquired. However, this may be a reflection of the differences in reporting systems among MSs.

Table CA3. | ***Distribution of confirmed campylobacteriosis cases in humans by reporting countries and origin of case (domestic/imported), 2007***

Country	Domestic (%)	Imported (%)	Unknown (%)	Total (n)
Austria	92.9	7.1	0	5,821
Belgium	0	0	100.0	5,906
Bulgaria	0	0	100.0	38
Cyprus	100.0	0	0	17
Czech Republic	99.2	0.8	0	24,137
Denmark	10.0	12.1	77.9	3,868
Estonia	86.8	13.2	0	114
Finland	19.2	56.6	24.2	4,107
France	23.9	4.5	71.6	3,058
Germany	88.0	6.6	5.3	66,107
Hungary	99.9	0.1	0	5,809
Ireland	12.1	1.5	86.4	1,885
Italy	7.4	1.2	91.4	676
Lithuania	99.6	0.4	0	564
Luxembourg	49.0	6.7	44.3	345
Malta	97.8	1.1	1.1	91
Netherlands	93.5	6.5	0	3,289
Poland	99.5	0.5	0	192
Slovakia	99.4	0.6	0	3,380
Slovenia	0	0.6	99.4	1,127
Spain	100.0	0	0	5,055
Sweden	30.2	65.3	4.5	7,106
United Kingdom	22.8	1.4	75.8	57,815
EU Total	**61.6**	**6.8**	**31.6**	**200,507**
Iceland	48.4	46.2	5.4	93
Liechtenstein	0	21.4	78.6	14
Norway	41.2	51.0	7.9	2,836

Within the EU, in 2007, children under the age of five had the highest notification rate, representing 120 campylobacteriosis cases per population of 100,000. The rates for other age groups varied between 32 and 53 cases per population of 100,000 (Figure CA3).

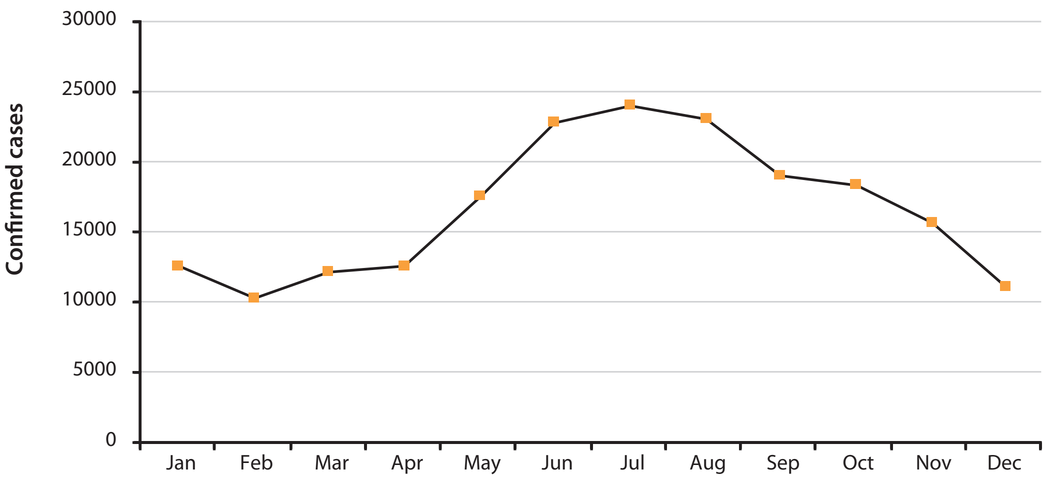
Figure CA3. ***Age-specific distribution of reported confirmed cases of human campylobacteriosis, TESSy data for reporting MSs, 2007***



Source: All MSs except Greece, Latvia, Portugal and Romania. (N = 198,452)

Higher numbers of *Campylobacter* cases in humans were reported during the summer months, from June to August, representing the characteristic and well-known seasonal variation for this type of infection in the warmer summer months (Figure CA4).

Figure CA4. ***Number of reported confirmed campylobacteriosis cases in humans by month, TESSy data for reporting MSs, 2007***



Source: Austria, Belgium, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Luxembourg, Malta, the Netherlands, Poland, Slovakia, Spain, Sweden and United Kingdom. (N=198,091)

The most frequently reported *Campylobacter* species in 2007 was *C. jejuni* (44.3%), while *C. coli* accounted for 2.7% of *Campylobacter* isolates. Other species, including *C. lari* (0.3%), accounted for 6.9% of the isolates. Forty-six percent of 194,563 *Campylobacter* isolates were not speciated or were unknown.

3.2.2 | *Campylobacter* in food

Several MSs reported data on *Campylobacter* in food in 2007 (Table CA4). The number of samples within food categories tested ranged from a few to several thousand samples. The majority of the samples were from food of animal origin: primarily from poultry meat, which is considered to be one of the major vehicles of *Campylobacter* infections in humans. Compared to 2006, one additional MS reported data in this category. No data for *Campylobacter* in drinking water were reported in 2007.

Table CA4. | ***Overview of countries reporting data on foodstuffs, 2007***

Data	Total number of MSs reporting	Countries
Poultry meat	19	**MSs:** AT, BE, CZ, DK, EE, FR, DE, HU, IE, IT, LV, LU, NL, PT, RO, SK, SI, ES, SE **Non-MSs:** NO, CH
Pig meat	11	**MSs:** AT, BE, CZ, EE, DE, HU, IE, IT, NL, SI, ES
Bovine meat	10	**MSs:** AT, EE, DE, HU, IE, IT, NL, SI, ES

Note: In the following chapter, only countries reporting 25 samples or more have been included for analyses

The sampling and testing methods varied between countries and, as such, the results from the different countries are not directly comparable. Also, it should be taken into consideration that the proportion of positive samples observed may be influenced by the time of year, at which the samples were taken, since in many countries *Campylobacter* are known to be more prevalent during the summer than during the winter.

Fresh poultry meat

The occurrence of *Campylobacter* in fresh broiler meat sampled at slaughter, processing, and at retail in 2003 to 2007, is summarised in Table CA5. In 2007, as in previous years, the proportions of *Campylobacter* positive broiler meat samples varied widely within MSs (from 0% to 86.5%), and many of the MSs recorded high or very high levels (>20%) of positive samples. However, Estonia, Latvia and Romania reported remarkably lower occurrences (0%-4.3%).

Compared to earlier years, twice as many MSs reported data collected at the slaughterhouse in 2007. The data revealed a large diversity between MSs, from no positive samples in Romania to proportions of positive samples of 55.8% and 86.5% in Spain and France, respectively. At retail, the proportion of positive poultry meat samples ranged from 4.3% to 67.1%.

Belgium, Denmark, Germany, Latvia and Spain reported data from two or three stages of the food chain (slaughter, processing and/or retail), however, no common trend in the occurrence of *Campylobacter* along the food chain was observed among these MSs.

The weighted means of the results from the 11 MSs reporting consistently over the past four years are presented in Figure CA5a. Since one MS, the United Kingdom, did not provide data for 2007, the trend was regarded discontinuous and was not tested for statistical significance. However, no major changes appear to have taken place in the proportion of *Campylobacter* positive samples in fresh broiler meat within these 11 reporting MSs.

The MS specific trends of the occurrence of *Campylobacter* positive fresh broiler meat samples during the years 2004 to 2007 are presented in Figure CA5b. Austria reported a marked increase in 2007 compared to previous years. Moreover, there appears to be slightly decreasing trends over these four years in Belgium, Italy, and a stronger one for the Netherlands. In Estonia, Germany, and the United Kingdom the frequency of isolating *Campylobacter* from fresh broiler meat samples has been relatively steady for the last three to four years. In Slovenia, a higher occurrence of positive findings was recorded in 2006 and 2007, compared to 2004 and 2005. Denmark reported a higher level of occurrence in 2007 than in previous years. MS specific trends were not analysed statistically.

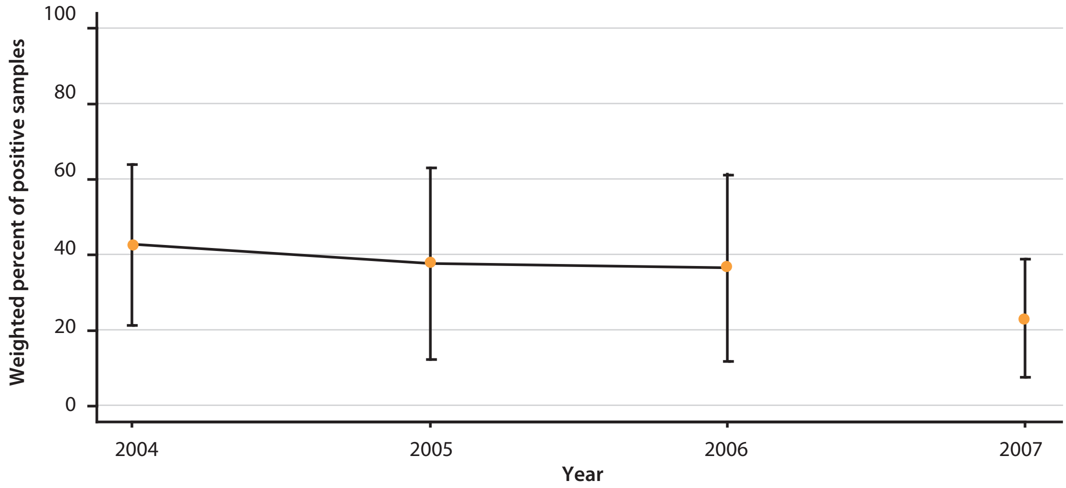
See Appendix 1 and notes to Figure CA5a for statistical descriptions of the analyses.

Table CA5. | ***Campylobacter* in fresh broiler meat[1] sampled at slaughter, processing and at retail, sample based data, 2003-2007**

Country	Sample unit	Sample size	2007		2006		2005		2004		2003	
			N	% pos	N	% pos	N	% pos	N	% pos	N	% pos
At slaughter												
Belgium[2]	Single	0.01g	235	22.6	315	1.9	270	19.6	197	27.9	142	16.2
Denmark	Single	10g/15g	439	8.2	959	7.9	1,689	12.3	1,603	17.8	-	-
Estonia	Batch	1g	46	2.2	-	-	235	4.7	27	37.0	-	-
France	Batch	10g	192	86.5	-	-	-	-	-	-	-	-
Hungary	Single	25g	232	31.9	-	-	-	-	-	-	-	-
Romania	Single	25g	778	0	-	-	-	-	-	-	-	-
Spain	Single	25g	147	55.8	-	-	-	-	-	-	-	-
Sweden	Single	10g	-	-	-	-	3,062	18.5	2,981	19.8	144	21.1
At processing plants												
Belgium	Single	0.01g	257	9.3	326	12.3	249	22.9	131	26.0	-	-
Germany	Single	25g	35	40.0	-	-	-	-	-	-	-	-
Ireland	Single	Various	112	63.4	150	45.3	854	51.4	2,620	54.7	-	-
Latvia	Single	25g	250	0.8	-	-	-	-	-	-		
Slovenia	Single	$20cm^2$	295	56.9	336	39.9	73	35.6	-	-	-	-
Spain	Single	25g	168	29.0	-	-	-	-	-	-	-	-
Norway	Single	25g	305	9.5	-	-	-	-	-	-	-	-
At retail												
Austria[3]	Single	25g	219	62.6	268	21.6	162	9.3	412	57.2	231	47.2
Belgium[4]	Single	0.01g	415	11.1	112	24.1	154	12.3	77	35.1	99	20.2
Denmark	Single	Various	695	37.6	605	12.4	983	21.2	584	23.5	407	32.9
Estonia	Single	25g	-	-	50	6.0	32	21.9	-	-	-	-
Germany[5]	Single	10g	574	40.9	1,121	39.0	1,254	43.9	2,684	43.0	1,396	19.6
Italy[6]	Single	25g	323	11.8	424	19.8	226	14.6	570	24.4	-	-
Latvia	Batch	1g	46	4.3	-	-	-	-	-	-	-	-
Luxembourg	Single	10g	182	37.9	44	27.3	42	61.9	-	-	-	-
Netherlands	Single	25g	1,407	10.9	1,302	14.2	1,605	23.5	1,477	29.3	1,510	26.0
Slovenia	Single	25g	343	67.1	100	59.0	-	-	95	40.0	-	-
Spain	Single	25g	208	30.8	-	-	-	-	-	-	-	-
Sweden	Single	10g	-	-	-	-	32	3.1	27	55.6	425	13.2
United Kingdom[8]	Single	25g	-	-	1,714	66.3	1,791	66.4	1,533	62.2	734	73.0
Total (17 MSs)			**7,598**	**26.0**	**7,826**	**30.4**	**12,713**	**29.8**	**15,018**	**36.9**	**5,088**	**30.9**
Switzerland[7]	Single	25g	287	52.9	-	-	-	-	-	-	-	-
Norway	Single	10g	-	-	958	8.5	938	6.0	1,067	5.1	1,093	5.0

Note: Data are only presented for sample size ≥25
1. Only data specified as fresh are included. Data on meat products, mechanically separated meat, minced meat, meat preparations and frozen meat are not included
2. In Belgium in 2003: sampling at slaughterhouse or processing plants
3. In Austria, sampling at retail and processing plants, chilled (n=162 tested, 73.5% positive) and frozen (n=57, 31.6% positive)
4. In Belgium, carcass samples included
5. In Germany, for the units sampled in 2004, 2005 and 2006 the sampling stages were unspecified
6. In Italy, for the units sampled in 2004, 2005 and 2006 the sampling stages were unspecified
7. In Switzerland, from the 287 samples 202 originated from Switzerland (49,0% positive) and 85 were imported (62,3% positive)
8. In the United Kingdom, in 2006, 860 units were tested at retail with 63.0% positive results and for 854 units the sampling stage was unspecified with 69.7% positive samples. In 2005 the sampling stage was unspecified

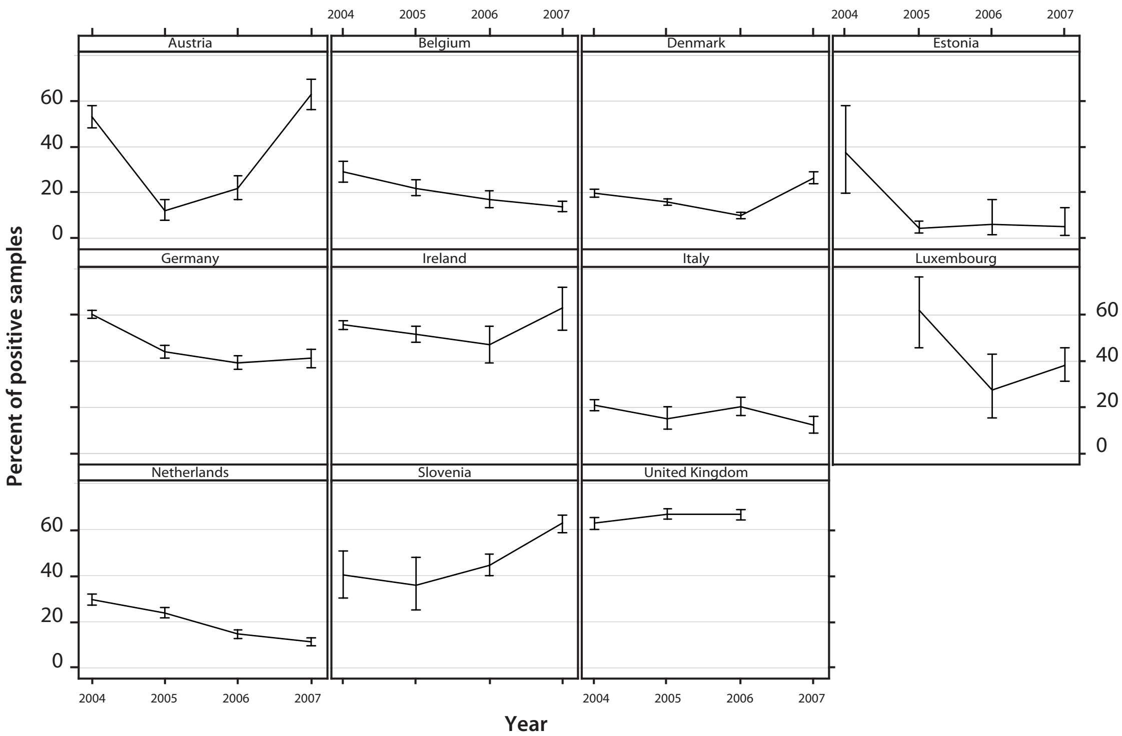
Figure CA5a. | ***Campylobacter* in fresh broiler meat[1] in 11 MSs (sample based data). Weighted EU proportion of positive samples with 95% confidence intervals, 2004-2007[2]**



Note: United Kingdom did not provide data for 2007

1. Combined data (samples taken at slaughter, at processing/cutting plant or at retail)
2. The weighted percent includes data from MSs reporting for at least three consecutive years (AT, BE, DK, EE, DE, IE, IT, LU, SI and UK). Weight is the reciprocal of the ratio between the number of tested samples per MS per year and the number of broilers per MS, based on the population data reported for 2006, and supplemented with EUROstat data from 2005 (AT, BE, IT and SE)

Figure CA5b. | ***Campylobacter* in fresh broiler meat[1] (sample based data). MS specific proportion of positive samples with 95% confidence intervals, 2004-2007**



1. Combined data (samples taken at slaughter, at processing/cutting plant or at retail)

In Table CA6, data are presented on *Campylobacter* in fresh turkey and poultry meat other than broilers and turkeys sampled at different stages in the production chain. Only seven MSs reported data with sample sizes ≥25 in this food category. The observed proportions of positive samples at retail indicate that poultry meat other than broiler meat may also be an important vehicle for *Campylobacter* infections in humans.

Germany and Slovenia examined turkey meat samples at two stages of the production chain. No substantial differences in the occurrence from slaughter to retail were observed in these investigations (Level 3).

Table CA6. | ***Campylobacter* in fresh[1], non-broiler poultry meat at slaughter, processing and retail, 2007**

Country	Sample level	Sample unit	Sample size	N	% Pos
Turkeys					
Austria	Retail	Single	25g	92	28.3
Belgium	Slaughter	Single	0.01g	50	24.0
Germany	Processing	Single	25g	27	22.2
	Retail	Single	25g	345	17.7
Hungary	Slaughter	Single	25g	166	18.1
Italy	Not specified	Single	25g	39	7.7
Netherlands	Retail	Single	25g	711	15.8
Slovenia	Slaughter	Single	$20cm^2$	102	34.3
	Retail	Single	25g	42	33.3
Total (turkeys) (7 MSs)				**1,574**	**19.0**
Norway	Processing	Single	25g	121	5.8
Other poultry					
Belgium	Slaughter	Batch	25g	74	98.6
Germany (ducks)	Retail	Single	25g	52	36.5
Hungary (ducks)	Slaughter	Single	25g	72	9.7
Hungary (geese)	Slaughter	Single	25g	47	4.3
Total (other poultry) (3 MSs)				**245**	**41.2**

Note: Data are only presented for sample size ≥25

1. Only data specified as fresh are included. Data on meat products, mechanically separated meat, minced meat, and meat preparations are not included

Fresh pig meat

Data reported by MSs on the occurrence of *Campylobacter* in fresh pig meat sampled at retail for the period 2003 to 2007 are summarised in Table CA7. The reported data imply that pig meat at retail is only infrequently contaminated with *Campylobacter,* despite few reporting MSs. In 2007, the occurrence of *Campylobacter* in fresh pig meat at retail ranged from 0% to 1.1%.

At slaughter and processing, *Campylobacter* were isolated more frequently than at retail, according to the few MSs collecting samples at several of these stages of production in 2007. At slaughter, Belgium and Hungary reported positive findings in 12.2% (N=213) and 2.8% (N=178) of the samples, respectively, and at processing Germany found 3.8% positive (N=26) (Level 3).

Table CA7. | **Campylobacter *in fresh pig meat*[1] *at retail, sample based data, 2003-2007***

Country	Sample unit	Sample size	2007		2006		2005		2004		2003	
			N	% Pos	N	% Pos	N	% Pos	N	% Pos	N	% Pos
Austria	Single	25g	109	0.9	93	1.1	89	1.1	-	-	-	-
Germany	Single	25g	123	0.8	290	0.7	391	0.5	454	2.0	188	2.7
Netherlands	Single	25g	269	1.1	397	0.3	389	0	287	1.1	227	0
Spain	Single	25g	36	0	40	0	107	0	-	-	-	-
Total (4 MSs)			**537**	**0.9**	**820**	**0.5**	**976**	**0.3**	**741**	**1.7**	**415**	**1.2**

Note: Data are only presented for sample size ≥25

1. Only data specified as fresh are included. Data on meat products, mechanically separated meat, minced meat, and meat preparations are not included

Fresh bovine meat

In 2007, only Italy out of the four reporting MSs found samples of fresh bovine meat positive for *Campylobacter* at retail (2.4%). Data from 2007 correspond to observations from the previous years demonstrating low occurrences of *Campylobacter* in fresh bovine meat at retail (Table CA8).

According to the data reported from the year 2007, Hungary found 1.4% of samples (N=144) positive for *Campylobacter* at slaughter, and Germany found none of the 25 samples positive at processing.

Table CA8. | **Campylobacter *in fresh bovine meat*[1] *at retail, sample based data, 2003-2007***

Country	Sample unit	Sample size	2007		2006		2005		2004		2003	
			N	% Pos	N	% Pos	N	% Pos	N	% Pos	N	% Pos
Estonia	Single	25g	-	-	42	0	-	-	-	-	-	-
Germany	Single	25g	35	0	43	0	47	2.1	-	-	-	-
Hungary	Single	25g	-	-	202	2.5	-	-	-	-	-	-
Italy	Single	25g	334	2.4	241	0.4	394	0.5	196	0	161	0.6
Luxembourg	Single	10g	62	0	37	0	-	-	-	-	-	-
Netherlands	Single	25g	264	0	936	0.4	463	1.1	847	0.8	678	0.2
Romania	Single	-	-	-	37	0	-	-	-	-	-	-
Total (7 MSs)			**695**	**1.2**	**1,538**	**0.7**	**904**	**0.9**	**1,043**	**0.6**	**839**	**0.3**

Note: Data are only presented for sample size ≥25

1. Only data specified as fresh are included. Data on meat products, mechanically separated meat, minced meat and meat preparations are not included

Products of meat origin

Data reported on the occurrence of *Campylobacter* in minced meat, meat preparations and meat products are summarised in Table CA9. In 2007, *Campylobacter* was most frequently isolated from products of poultry meat origin compared to products of pig and bovine meat origin.

From RTE products and products intended to be eaten raw, only Italy detected *Campylobacter* positive samples. *Campylobacter* was isolated from six of 137 samples of pig meat products and from one of 238 samples of minced pig meat intended to be eaten raw in Italy. In non-ready-to-eat products *Campylobacter* was detected more frequently by several MSs (Table CA9).

Table CA9. | ***Campylobacter* in products of meat origin, 2007**

Country	Description	Sample unit	Sample size	N	% Pos
READY-TO-EAT					
Broiler meat					
Ireland	Meat products at retail	Single	25g	399	0
Turkey meat					
Ireland	Meat products at retail	Single	25g	75	0
Pig meat					
Austria	Meat products at retail	Single	25g	32	0
Ireland	Meat products at retail	Single	25g	165	0
	Meat products	Single	25g	137	5.8
Italy	Meat preparation, intended to be eaten raw	Single	25g	36	0
	Minced meat, intended to be eaten raw	Single	25g	238	0.4
Total (3 MSs)				**608**	**1.5**
Bovine meat					
Ireland	Meat products at retail	Single	25g	64	0
Italy	Minced meat, intended to be eaten raw	Single	25g	32	0
Luxembourg	Minced meat, intended to be eaten raw	Single	10g	44	0
Total (3 MSs)				**140**	**0**
NON-READY-TO-EAT (or not specified)					
Broiler meat					
Austria	Meat preparation at retail, intended to be eaten cooked	Single	25g	147	3.4
	Meat preparation at processing, intended to be eaten cooked	Batch	0.01g	79	8.9
Belgium	Meat preparation at retail, intended to be eaten cooked	Single	0.01g / 1g	557	1.1
	Minced meat at retail, intended to be eaten cooked	Single	1g	161	0
Germany	Meat preparation at retail, intended to be eaten cooked	Single	25g	91	22.0
Spain	Meat products at retail	Single	25g	355	0.3
Total (4 MSs)				**1,390**	**2.8**
Norway[1]	Minced meat at processing, intended to be eaten cooked	Single	25g	70	4.3
Turkey meat					
Germany	Meat preparation at retail, intended to be eaten cooked	Single	25g	61	8.2
Pig meat					
Italy	Minced meat, intended to be eaten cooked	Single	25g	84	9.5
Spain	Meat products at processing	Single	25g	42	0
Total (2 MSs)				**126**	**6.3**
Bovine meat					
Netherlands	Minced meat, intended to be eaten cooked	Single	25g	325	0.6

Note: Data are only presented for sample size ≥25
1. Samples from Norway were mixed minced meat from broiler and turkey

Other foodstuffs

Several MSs tested food categories other than poultry, pig or bovine meat for the presence of *Campylobacter*. The proportion of positive samples in raw cow's milk and dairy products in 2007 is presented in Table CA10. In raw cow's milk, the occurrence of *Campylobacter* was generally very low (<1%), although Germany and Hungary isolated *Campylobacter* at higher frequencies. Italy found one positive sample in raw milk intended for direct human consumption. In dairy products, based on various types of milk, no *Campylobacter* was detected by MSs, except for Slovakia where the proportion of positive samples was as high as 8.7% in cheeses from sheep's milk.

In 2007, none of 234 samples of seafood including shrimps (Belgium, N=63), live bivalve molluscs (Belgium and Italy, N=92) and other fishery products (Austria and Ireland, N=79) tested positive for *Campylobacter* (Level 3).

For additional data on other food categories, refer to Level 3 tables.

Table CA10. | **Campylobacter *in cow's milk and dairy products, 2007***

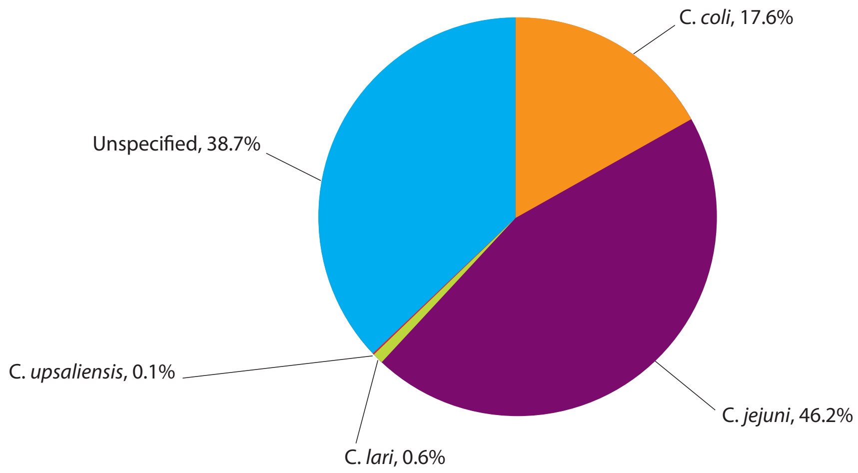
Country	Description	Sample unit	Sample size	N	% Pos
Cow milk					
Austria	Raw milk 'at farm'	Single	25g	101	0
Germany	Raw milk for direct human consumption	Single	25g	145	0
	Raw milk 'at farm', recommended heat treated	Single	25g	193	0.5
	Raw milk for manufacture	Single	25g	243	1.6
Hungary	Raw milk	Single	50ml	31	3.2
Italy	Raw milk	Single	25g	3,169	0.4
	Raw milk for direct human consumption	Batch	25g	31	0
	Raw milk for direct human consumption	Single	25g	211	0.5
	Raw milk for manufacture of raw or low heat-treated products	Single	25g	34	0
Total (4 MSs)				**4,158**	**0.48**
Dairy products					
Belgium	Soft or semi-soft cheese from raw or low heat-treated cow's milk, at retail	Single	25g	46	0
Italy	Cheese from raw or low heat-treated cow's milk	Single	25g	81	0
	Cheese from raw or low heat-treated sheep's milk	Single	25g	192	0
	Soft or semi-soft cheese from buffalo milk	Single	25g	36	0
Slovakia	Cheese from sheep's milk	Batch	25g	69	8.7
Spain	Cheese from unspecified milk	Single	25g	30	0
	Unspecified (not cheese)	Single	25g	66	0
Total (4 MSs)				**520**	**1.15**

Campylobacter species in foodstuffs

The overall *Campylobacter* species distribution in fresh broiler meat at Community level is presented in Figure CA6. *C. jejuni* accounted for the majority of the isolates, while *C. coli* was found less frequently.

Most MSs reported *C. jejuni* as the predominant species isolated from fresh broiler meat. The majority of MSs reported more than 65% of the speciated isolates being *C. jejuni*, but the proportions ranged from 17.1% to 100%. *C. coli* was also isolated from broiler meat samples, but constituted less than 30% of speciated isolates in most MSs, ranging from 0% to 59%. Only Norway and Slovenia found *C. lari* in fresh broiler meat at a low frequency (0.3% and 3.5% respectively). For information on data reported on other foodstuffs refer to Level 3 tables. A rather large proportion of the *Campylobacter* isolates was unspecified, i.e. not speciated or the information was not available.

Figure CA6. | ***Distribution of speciated* Campylobacter *isolates from fresh broiler meat, 2007***



Source: Belgium, Denmark, France, Germany, Hungary, Ireland, Italy, Latvia, Luxembourg, the Netherlands, Romania, Slovenia, Spain and Norway. (N=6,969)

3.2.3 | *Campylobacter* in animals

In 2007, a total of 24 countries (22 MSs and two non-MSs) reported data on *Campylobacter* in animals (Table CA11). The reported data were primarily on prevalence in broiler flocks, but also in pigs, cattle and to some extent in goats, sheep and pets.

For animals, as in the case for foodstuffs, it should be noted that results from countries are not directly comparable due to differences in sampling and testing schemes, as well as to the impact of the season of sampling.

Table CA11. | ***Overview of countries reporting animal data, 2007***

Data	Total number of MSs reporting	Countries
Poultry	16	**MSs:** AT, CZ, DK, EE, FI, FR, DE, IE, IT, LV, LT, NL, SK, SI, ES, SE **Non-MSs:** NO, CH
Pigs	10	**MSs:** DK, FR, DE, IE, IT, LV, LU, SK, ES, UK
Cattle	14	**MSs:** AT, DK, DE, HU, IE, IT, LV, LU, NL, PL, PT, SK, ES, UK **Non-MS:** NO

Note: In the following chapter, only countries reporting 25 samples or more have been included for analyses

Broilers and other poultry

Compared to 2006, six fewer MSs reported information on the proportion of positive *Campylobacter* samples in broiler flocks in 2007 (Table CA12). In most reporting MSs the recorded proportions of positive samples were high (over 30%), ranging from 0% to 82.8% in the countries. Low and moderate levels (<13%) were only observed in Estonia, Finland, Sweden and Norway.

Generally, reported data for 2007 were similar to the reports from previous years. Only Germany, Italy and Switzerland reported higher prevalence than previously. No country has observed a remarkable reduction of the occurrence of *Campylobacter* in their broiler flocks in recent years.

The weighted means of *Campylobacter* prevalence in the group of six MSs that reported continuously over the past four years showed no significant trend throughout this period (2004-2007). The weighted mean prevalence stayed approximately at the level of 60% within this group of MSs (Figure CA7a).

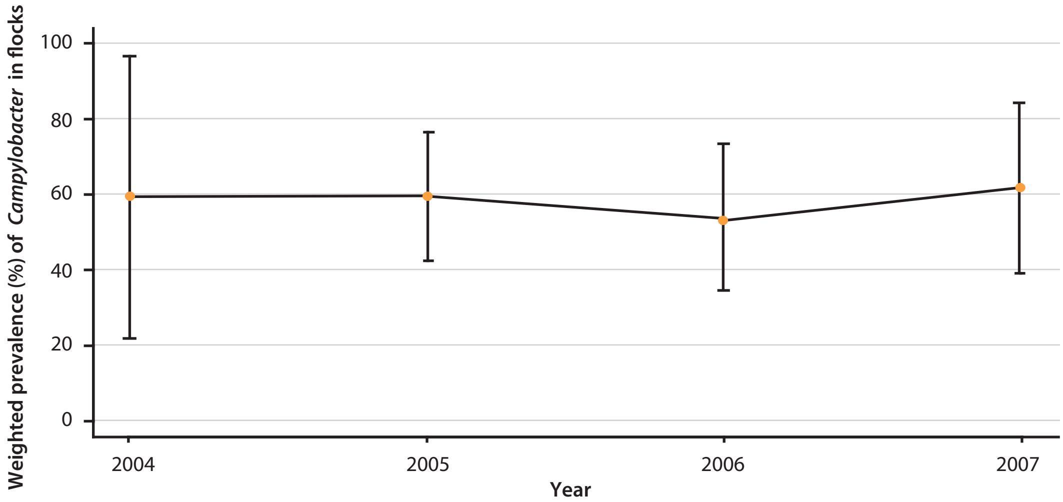
In most reporting MSs, *Campylobacter* prevalence in broiler flocks has remained stable over the previous four years. Only Germany experienced some fluctuations in reported prevalence and Italy reported a slight increase in 2007 (Figure CA7b). Refer to Appendix 1 and notes to Figure CA7a for statistical descriptions.

Table CA12. **Campylobacter *in broiler flocks*[1]*, 2003-2007***

Country	2007		2006		2005		2004		2003	
	N	% Pos	N	% Pos	N	% Pos	N	% Pos	N	% Pos
Austria	80	60.0	550	52.2	656	61.4	648	64.5	549	58.7
Czech Republic	246	45.1	189	48.7	92	52.2	-	-	-	-
Denmark	4,527	26.8	4,595	29.9	4,918	29.9	520	27.0	349	32.4
Estonia	46	0	224	0	-	-	-	-	-	-
Finland [2]	1,440	7.1	1,333	5.9	1,320	7.4	1,315	6.2	77	6.5
Finland [3]	98	0	123	0	104	1.0	-	-	-	-
France	192	80.2	202	81.7	142	85.2	183	83.1	-	-
Germany	111	78.4	365	22.5	766	50.4	273	39.2	-	-
Hungary	-	-	499	10.0	-	-	-	-	-	-
Ireland[4]	-	-	192	0	-	-	-	-	-	-
Italy	116	82.8	96	37.5	48	45.3	-	-	-	-
Italy (Veneto region)	-	-	155	83.2	51	86.3	212	91.0	154	71.4
Latvia	265	37.0	70	47.1	-	-	-	-	-	-
Latvia[4]	75	34.7	62	43.5	-	-	-	-	-	-
Lithuania	-	-	1,337	0.3	1,007	0.5	-	-	-	-
Lithuania[4]	-	-	840	1.2	973	0.2	1,806	0	-	-
Netherlands	-	-	-	-	-	-	6,208	10.0	-	-
Slovenia	372	75.3	311	72.3	306	65.0	-	-	-	-
Spain	89	46.1	98	50.0	-	-	-	-	-	-
Sweden	2,603	12.6	2,572	13.8	3,067	13.3	3,019	14.2	3,224	17.6
Total (16 MSs)	**10,260**	**25.2**	**13,813**	**21.7**	**13,450**	**23.8**	**14,184**	**15.1**	**4,353**	**25.7**
Norway	4,268	5.2	4,035	4.2	3,899	3.4	3,842	3.1	3,550	4.9
Norway[4]	4,109	4.4	3,878	3.7	3,652	3.6	3,626	1.7	-	-
Switzerland	320	43.4	320	25.9	596	23.0	-	-	-	-

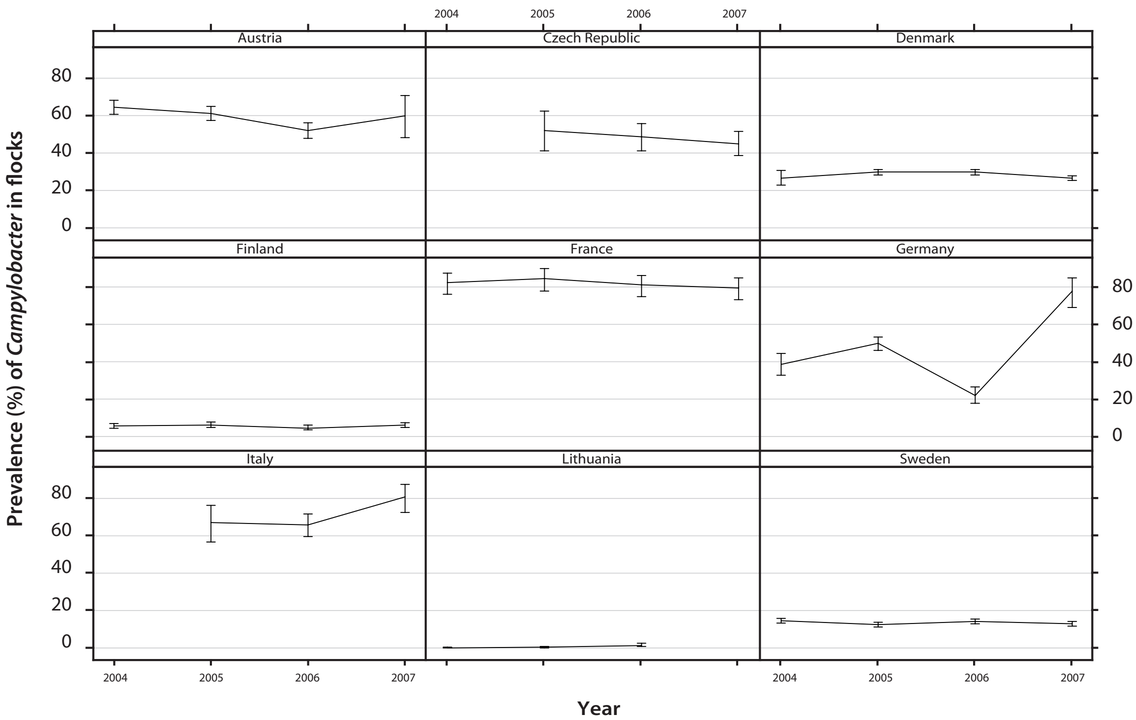
Note: Data are only presented for sample size >25
1. Sampling at slaughterhouse if nothing else stated
2. In Finland, data collected June-October
3. In Finland, data collected November-May
4. At farm

Figure CA7a. | **Campylobacter *in broiler flocks in nine MSs. Weighted EU prevalence in broiler flocks with 95% confidence intervals, 2004-2007*[1]**



1. The weighted proportion positive includes data from MSs reporting for at least three consecutive years (AT, CZ, DK, FI, FR, DE, IT, LT and SE). Weight is the reciprocal of the ratio between the number of tested flocks per MS per year and the number of broilers per MS, based on the population data reported for 2006, and supplemented with EUROSTAT data from 2005 (AT and SE)

Figure CA7b. | **Campylobacter *in broiler flocks. MS specific prevalence of positive flocks with 95% confidence intervals, 2004-2007***



Campylobacter findings in other poultry species than *Gallus gallus* were reported by Italy, the Netherlands, Slovenia and Norway (see Level 3 tables). In turkey flocks, the Netherlands reported no positive samples (N=42), Norway reported a prevalence of 9.3% (N=107), and Slovenia 51.1% (N=135).

Additionally, Italy investigated pigeons and found 7.2% positive for *Campylobacter* (N=207).

Pigs

In 2007, *Campylobacter* findings in pigs were reported by six MSs (Table CA13). The proportion of *Campylobacter* positive samples ranged between 19.6% and 78.5%. For the few MSs reporting consistently over the last five years *Campylobacter* prevalence appears mainly to remain at high levels with few fluctuations. In Denmark and Germany, reported *Campylobacter* prevalence in pigs reached a minimum in 2006, but returned to former levels in 2007.

Within the period 2003 to 2006, the total proportion of positive *Campylobacter* findings in pigs in reporting MSs seemed to have decreased. However, in 2007, this total proportion of positive findings increased once again. This observation most likely reflects the variation within MSs reporting each year and differences in sample sizes in MSs compared to previous years, rather than a true trend.

Table CA13. | **Campylobacter *in pigs and pig herds, 2003-2007***

Country	2007		2006		2005		2004		2003	
	N	% Pos	N	% Pos	N	% Pos	N	% Pos	N	% Pos
Pigs (animal based data)										
Germany[1]	224	29.5	559	19.7	332	24.7	375	24.8	430	22.6
Luxembourg	-	-	64	35.9	-	-	-	-	-	-
United Kingdom	-	-	-	-	-	-	-	-	528	69.3
Pigs (herd based data)										
Austria	-	-	-	-	532	48.7	741	57.5	262	53.8
Denmark	261	78.5	295	52.2	185	85.4	191	79.6	259	93.4
France	192	64.1	204	67.6	-	-	176	70.5	-	-
Hungary	-	-	505	8.1	-	-	-	-	-	-
Ireland	-	-	216	0.9	-	-	-	-	-	-
Italy	47	66.0	199	55.8	84	25.0	37	67.6	46	52.2
Slovakia[3]	148	19.6	39	56.4	53	30.2	-	-	-	-
Spain[4]	230	71.3	195	73.8	-	-	-	-	-	-
Total (11 MSs)	**1,102**	**56.1**	**2,276**	**32.7**	**1,186**	**45.2**	**1,520**	**54.0**	**1,525**	**57.0**

Note: Data are only presented for sample size ≥25

1. In Germany in 2007, herd based data
2. In 2007, holding based data
3. In 2007, animal based sampling
4. Slaughter batch based data

Cattle

The data on *Campylobacter* findings in cattle populations for the years 2003-2007 are summarised in Table CA14. Ten MSs and Norway provided data on cattle in 2007 (sample size ≥25). As in 2006, the proportion of positive samples was below 25% in most reporting MSs. Higher prevalence of 34.4%, 70.5% and 46.0% were reported in Austria, Denmark and Spain, respectively. Denmark observed their highest prevalence in cattle for the previous five years. In Italy a decreasing trend in prevalence was observed from 2003 to 2007. In general, higher proportions of positive samples were reported for calves under one year old compared to dairy cattle.

Apart from the data reported in Table CA14, Poland investigated the *Campylobacter* status of 77 breeding bulls that all tested negative.

Table CA14. | ***Campylobacter* in cattle and cattle herds, 2003-2007**

Country	Description	2007		2006		2005		2004		2003	
		N	% Pos	N	% Pos	N	% Pos	N	% Pos	N	% Pos
Cattle (animal based data)											
Austria	Dairy cows	569	20.2	823	14.2	1,012	17.9	898	18.6	346	35.0
	Calves <1 year	-	-	83	24.1	-	-	-	-	-	-
	Meat production animals	326	34.4	423	28.6	-	-	-	-	-	
Hungary	Dairy cows	5,011	0	456	6.8	-	-	-	-	-	-
Ireland	-	-	-	2,048	0.1	-	-	4,375	0.8	-	-
	Calves <1 year	1,869	11.1	3,756	6.3	-	-	-	-	-	-
Italy	Dairy cows	-	-	1,621	0.9	35	2.9	-	-	-	-
	-	-	680	0.6	1,540	3.2	1,444	0.7	-	-	-
Luxembourg	-	166	13.9	183	20.2	-	-	-	-	-	-
Netherlands	-	3,005	0.7	22,532	0	-	-	-	-	-	-
United Kingdom	-	-	-	-	-	-	-	-	-	667	54.6
Norway[1]	-	53	30.2	41	36.6	37	16.2	-	-	-	-
Cattle (herd based data)											
Denmark[2]	-	132	70.5	224	44.2	73	42.5	67	64.2	88	63.6
Germany	Cattle (all)	503	10.7	697	9.8	601	12.0	394	14.0	-	-
	Calves <1 year	70	22.9	128	5.5	32	46.9	-	-	-	-
	Dairy cows	57	0	153	-	315	0.3	-	-	-	-
Italy[3]	-	33	6.1	155	15.5	295	17.0	150	28.0	119	35.3
Italy[4] (Veneto Region)	-	-	-	67	59.7	28	71.4	-	-	-	-
Lithuania	Dairy cows	-	-	461	0	732	1.4	1,424	0.1	-	-
Slovakia[5]	-	635	0.2	434	0.7	524	0.2	-	-	-	-
Spain[4]	Meat production animals	163	46.0	-	-	-	-	-	-	-	-
Total (12 MSs)		**12,539**	**5.9**	**34,924**	**2.4**	**5,187**	**8.4**	**8,752**	**4.0**	**1,220**	**47.8**

Note: Data are only presented for sample size ≥25

1. In Norway, clinical samples
2. In Denmark in 2007, Cattle >2 years
3. In Italy in 2007, calves <1 year
4. In Italy and Spain, slaughter batch based data
5. In Slovakia, in 2007, animal based sampling

Other farm animals

In 2007, five MSs reported *Campylobacter* investigations in goats and sheep (Table CA15). In goats, *Campylobacter* was not detected by the two reporting MSs: Italy and the Netherlands. In sheep, the proportion of positive samples was on average 3.2% (ranging between 0% and 8% within MSs).

No *Campylobacter* was found in domestic solipeds in the Netherlands (N=194). However, in Germany *Campylobacter* was found in 211 of 370 herds (57%) of domestic solipeds. The German observation is in contrast to their negative findings in 65 animals in 2006 (Level 3 table).

Table CA15. | **Campylobacter *in goats and sheep*[1]*, 2007***

Country	N	% Pos
Goats		
Italy	44	0
Italy[2]	79	0
Netherlands	315	0
Sheep		
Germany[3]	62	6.5
Greece	70	2.9
Ireland	195	7.7
Italy	152	0.7
Italy[2]	190	1.6
Italy[3]	25	0
Netherlands	782	2.8
Total (sheep) (5 MSs)	**1,476**	**3.2**

Note: Data are only presented for sample size ≥25
1. Animal based data if nothing else stated
2. Holding based sampling
3. Herd based sampling

Pets

In 2007, 2,775 pets, including cats, dogs and birds, were tested by MSs for *Campylobacter* (Table CA16). As in 2006, birds were only tested in the Netherlands and none were found positive for *Campylobacter*. All countries providing information on *Campylobacter* in cats and dogs reported between 5.2% and 23.5% positive samples. Ireland reported that their results from dogs were based on diagnostic sampling.

Table C16A. | ***Campylobacter* in pets, 2005-2007**

Country	2007		2006		2005	
	N	% Pos	N	% Pos	N	% Pos
Birds						
Netherlands	120	0	97	0	-	-
Cats						
Germany	227	7.0	218	1.4	221	3.2
Italy[1]	286	5.2	35	8.6	-	-
Netherlands	225	8.9	226	2.2	238	1.7
Norway[4]	34	11.8	-	-	-	-
Dogs						
Denmark[2]	-	-	28	46.4	-	-
Germany	677	5.5	430	7.0	803	3.7
Ireland[3]	481	14.6	447	0.2	-	-
Italy	179	6.7	274	6.6	211	4.3
Netherlands	376	19.9	71	69.0	133	29.3
Slovakia	55	7.3	56	8.9	52	5.8
Norway[4]	115	23.5	103	19.4	78	20.5

Note: Data are only presented for sample size ≥25
1. In Italy in 2007, sampling unit is holding, not single samples
2. In Denmark in 2006, diagnostic sampling
3. In Ireland in 2007, diagnostic sampling
4. In Norway in 2005-2007, diagnostic sampling

Campylobacter species in animals

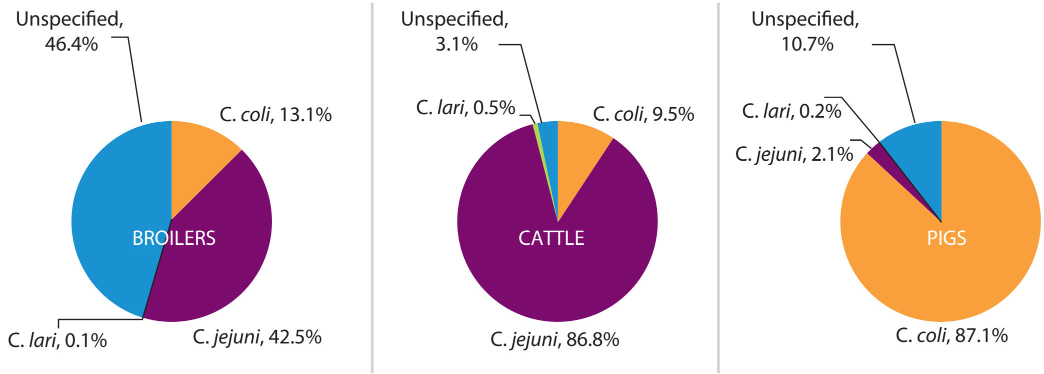
Among animal samples tested positive for *Campylobacter,* only about half of the isolates from broilers were speciated (53.6%), while speciation was more common for isolates from pigs (89.3%) and cattle (96.9%). Nevertheless, reported data indicate that *C. jejuni* was the most commonly isolated species in broilers and cattle, while the vast majority of isolates from pigs were *C. coli* (Figure CA8).

The proportion of speciated isolates from broilers reported as *C. jejuni* ranged from 42.5% to 100% between MSs. *C. coli* was also found in relatively high proportions in broilers (5.4%-53.1%). The highest proportions of *C. coli* in broilers were reported in Austria (52.1%), Italy (53.1%) and Spain (51.1%). In cattle, 50.0% to 100% of the speciated isolates were identified as *C. jejuni* in MSs, while the proportion of *C. coli* isolates varied between 0% and 41.4%. From pigs, *C. coli* accounted for 62.6%-97.8% of the speciated isolates, while *C. jejuni* were found in 10.6% or less isolates.

In pet cats and dogs, several different *Campylobacter* species were reported: primarily *C. jejuni*, *C. coli*, and *C. upsaliensis*.

For additional information on speciation of animal isolates, please see Level 3.

Figure CA8. | ***Species distribution of positive samples isolated from broilers, cattle and pigs, 2007***

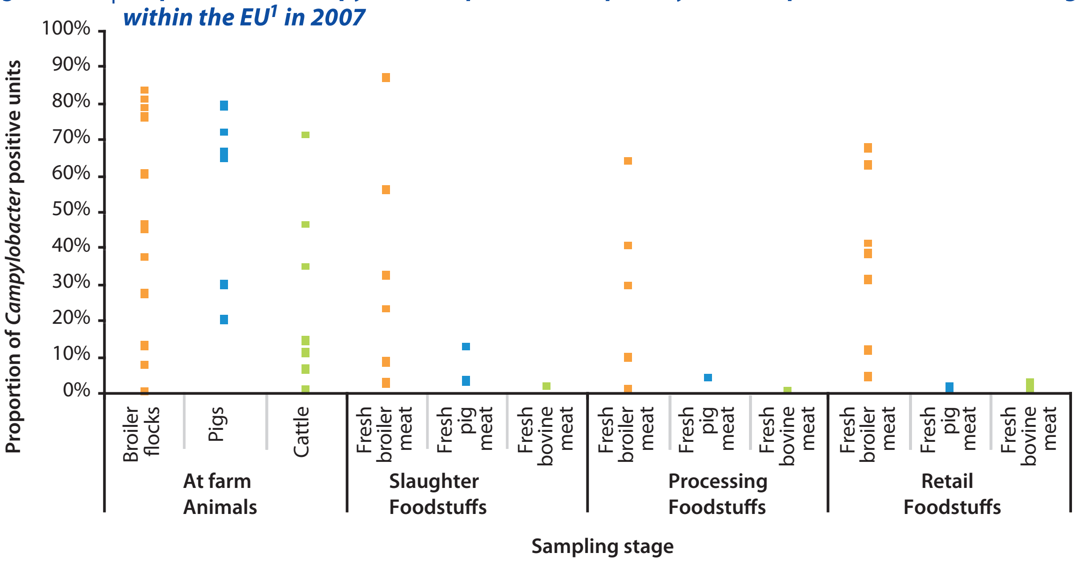


Broilers: Source: Austria, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Italy, Latvia, Slovenia, Spain, Sweden, Norway, Switzerland (N=19,328)
Cattle: Source: Austria, Denmark, Germany, Hungary, Ireland, Italy, Luxembourg, the Netherlands, Poland, Slovakia, Spain, Norway (N=12,669)
Pigs: Source: Denmark, France, Germany, Italy, Slovakia, Spain (N=1,102)

3.2.4 | General consideration

A general presentation of *Campylobacter* data reported by MSs in 2007 from broilers, pigs and bovine animals and food thereof is presented in Figure CA9. The data indicate that the proportion of positive samples is much higher in live pigs and cattle populations compared to samples of fresh pig and bovine meat at processing and retail. The prevalence of *Campylobacter* in broilers, however, only decreases slightly from live animals to meat at processing, while no decrease is noted in fresh meat from processing to retail. A similar situation was observed in 2006 (Community Summary Report 2006). This suggests that pig and bovine carcasses are less contaminated with faecal material during slaughter and/or that *Campylobacter* are not able to survive well on pig and bovine meat during slaughtering and processing operations. MS *Campylobacter* observations are distributed quite evenly between the maximum and minimum observations within the different categories indicating substantial variations within the Community.

Figure CA9. | ***Proportions of* Campylobacter *positive samples, by animal species and foodstuff category within the EU[1] in 2007***



1. Each point represents a MS observation

The observed variation may be due to several reasons such as: a true variation between MSs, differences in sampling and testing protocols or seasonal variation in the occurrence of *Campylobacter*.

3.2.5 Discussion

In 2007, *Campylobacter* infections continued to be the most commonly reported zoonotic disease in humans within the EU. Most MSs reported increases in the number of confirmed cases compared to 2006. Moreover, it is likely that the number of cases still remain underreported, since the clinical picture of campylobacteriosis is often mild and therefore the health services might not be contacted.

The overall reported numbers of confirmed campylobacteriosis cases in the EU has been increasing since 2003. The year 2006 was an exception, when the number dropped, most likely due to lower numbers of cases reported from the Czech Republic and Germany. The overall increase in the reported number of confirmed cases in the EU can to some extent be explained by more MSs reporting data each year, but several MSs reported more cases than in previous years.

Despite the increase in the total number of cases at EU level, the overall EU notification rate has been decreasing since 2005 from 51.6 (in 2005) to 45.2 per population of 100,000 in 2007. This decrease is explained by new MSs entering the EU where the combination of a large population and low numbers of cases reported impacts the overall EU notification rate. The EU trend in notification rates should therefore be interpreted with caution.

Poultry meat still appears to be the most important food-borne source of *Campylobacter* as the occurrence of the bacteria remained at a high level throughout the food chain: from animals to meat at retail. Whereas, the high prevalence observed in live cattle and pigs was typically followed by a strong decrease during slaughter and the occurrence remained low in bovine and pig meat at retail. In other foodstuffs *Campylobacter* has only occasionally been detected.

Campylobacter prevalence in poultry and pig populations were generally at very high levels in EU MSs. However, lower prevalence in broiler flocks were reported by some Nordic and Baltic countries, which may indicate that there are ways to combat *Campylobacter* infections in broiler flocks.

Campylobacter was also regularly detected in cattle but prevalence was somewhat lower compared to levels in broilers and pigs. In addition *Campylobacter* was present in other investigated animal species but not in equally high levels.

Since the relevance of pigs and cattle as sources of human *Campylobacter* infections and infections of other animal species, such as poultry, remains unclear, it would be useful to carry out further investigations, for example through formal risk assessments.

None of the MSs observed significant trends in *Campylobacter* prevalence in broiler flocks or broiler meat during the past years. The same applies to *Campylobacter* in other animal species and foodstuffs.

In 2008, a baseline survey on *Campylobacter* in live broilers and broiler carcasses was carried out in EU MSs. This survey will provide comparable data on the prevalence in MSs and will assist the European Commission and MSs to consider needs for control options to combat *Campylobacter*. In 2008, EFSA received a request from the Commission for the updating and quantification of the risk posed by *Campylobacter* in broiler meat production. The Scientific Panel on Biological Hazards has started to work with this mandate, and the EU-wide baseline survey will provide data for this quantitative risk assessment.

Listeria | 3.3.

The bacterial genus *Listeria* currently comprises six species, but human cases of listeriosis are almost exclusively caused by the species *Listeria monocytogenes*. *Listeria* are ubiquitous organisms that are widely distributed in the environment, especially in plant matter and soil. The principal reservoirs of *Listeria* are soil, forage and water. Other reservoirs include infected domestic and wild animals. The main route of transmission to both humans and animals is believed to be through consumption of contaminated food or feed. However, infection can also be transmitted directly from infected animals to humans as well as between humans. Cooking kills *Listeria*, but the bacteria are known to multiply at temperatures down to +2/+4°C, which makes the occurrence in RTE foods with a relatively long shelf life of particular concern.

In humans severe illness mainly occurs in the unborn child, infants, the elderly and those with compromised immune systems. Symptoms vary, ranging from mild flu-like symptoms and diarrhoea to life threatening infections characterised by septicaemia and meningoencephalitis. In pregnant women the infection can spread to the foetus, which may either be born severely ill or die in the uterus and result in abortion. Illness is often severe and mortality is high. Human infections are rare yet important given the associated high mortality rate. These organisms are among the most important causes of death from foodborne infections in industrialised countries.

In domestic animals (especially sheep and goats) clinical symptoms of listeriosis include encephalitis, abortion, mastitis or septicaemia. However, animals may also commonly be asymptomatic intestinal carriers and shed the organism in significant numbers, contaminating the environment.

Table LI1 presents the countries that have reported data on *Listeria* for 2007.

Table LI1. | ***Overview of MSs reporting* Listeria monocytogenes *data, 2007***

Data	Total number of MSs reporting	Countries
Human	26	**All MSs** except PT **Non-MSs:** IS, NO
Food	22	**All MSs** except CY, FI, FR, LT, MT **Non-MSs:** NO, CH
Animal	18	**MSs:** AT, BG, DE, EE, FI, GR, HU, IE, IT, LV, LT, NL, PL, PT, SK, ES, SE, UK

Note: In the following chapter, only countries reporting 25 samples or more have been included for analyses

3.3.1 | Listeriosis in humans

In 2007, MSs reported 1,558 human cases of listeriosis of which almost all were laboratory confirmed (Table LI2). The overall notification rate in the EU was 0.3 cases per population of 100,000, as was also the case in 2006. Fewer confirmed cases of listeriosis were reported in 2007 than in 2006, despite contributions from Bulgaria which became an EU MS in 2007. Although fewer cases were reported in 2007 than in 2006, with Germany experiencing the largest decrease in confirmed cases, half (53.8%) of EU MSs with confirmed cases reported an increase in cases over the two-year period. The highest notification rates were observed in Denmark, Finland, Sweden and Luxembourg.

Table LI2. | ***Reported listeriosis cases in humans 2003-2007[1], and notification rates for confirmed cases in 2007***

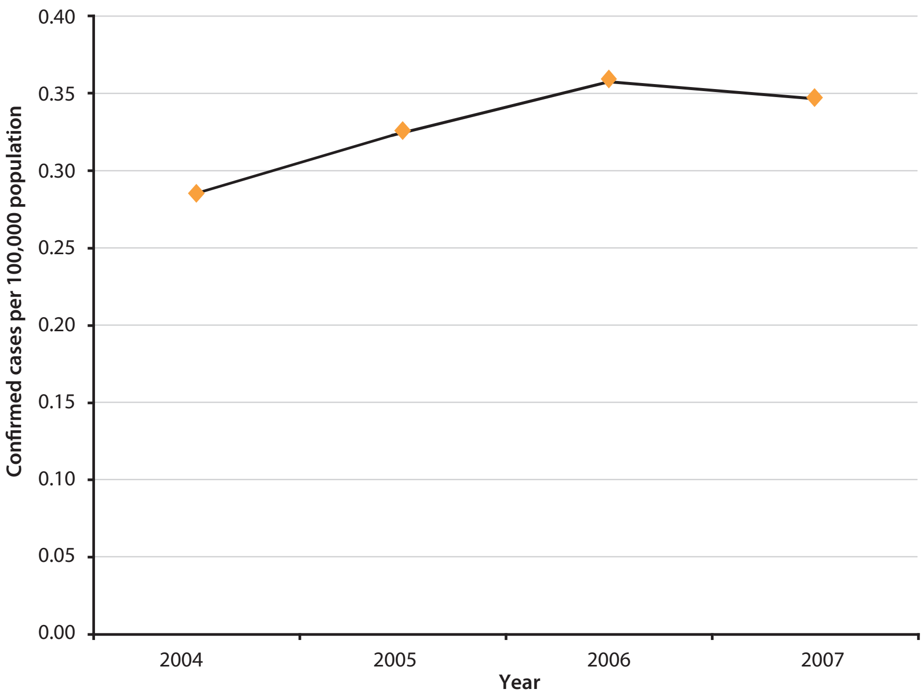
Country	2007				2006	2005	2004	2003
	Report Type[2]	Cases	Confirmed Cases	Cases/100,000				
Austria	A	20	20	0.2	10	9	19	8
Belgium	C	57	57	0.5	67	62	89	76
Bulgaria[3]	A	11	11	0.1	6	–	–	–
Cyprus	U	0	0	0	1	–	–	–
Czech Republic	C	51	51	0.5	78	15	16	
Denmark	C	58	58	1.1	56	46	41	29
Estonia	C	3	3	0.2	1	2	2	
Finland	C	40	40	0.8	45	36	35	41
France	C	319	319	0.5	290	221	236	220
Germany	C	356	356	0.4	508	510	296	256
Greece	C	10	10	0.1	6	–	3	0
Hungary	C	9	9	0.1	14	10	16	
Ireland	C	21	21	0.5	7	11	11	6
Italy	C	65	65	0.1	51	51	25	0
Latvia	C	5	5	0.2	2	3	3	8
Lithuania	A	4	4	0.1	4	2	1	2
Luxembourg	C	3	3	0.6	4	0	–	–
Malta	U	0	0	0	0	0	–	–
Netherlands	C	72	68	0.4	64	96	55	52
Poland	C	43	43	0.1	28	22	10	5
Portugal	–[4]	–	–	–	–	–	38	–
Romania[3]	U	0	0	0	–	–	–	–
Slovakia	C	9	9	0.2	12	5	8	6
Slovenia	C	4	4	0.2	7	0	1	6
Spain	C	81	81	0.2	78	68	100	52
Sweden	C	56	56	0.6	42	35	44	48
United Kingdom	C	261	261	0.4	208	223	232	255
EU Total		**1,558**	**1,554**	**0.3**	**1,589**	**1,427**	**1,281**	**1,070**
Iceland	C	4	4	1.3	0	0	–	–
Liechtenstein	U	0	0	0	0	–	–	–
Norway	C	49	49	1.0	27	14	23	16

1. Number of confirmed cases for 2005-2007 and number of total cases for 2003-2004
2. A: aggregated data report; C: case-based report; –-: no report; U: unspecified
3. EU membership began in 2007
4. No surveillance system exists

Overall, the total reported number of confirmed listeriosis cases has increased from 2004 to 2006 but a slight decrease was observed in 2007 (Figure LI1a).

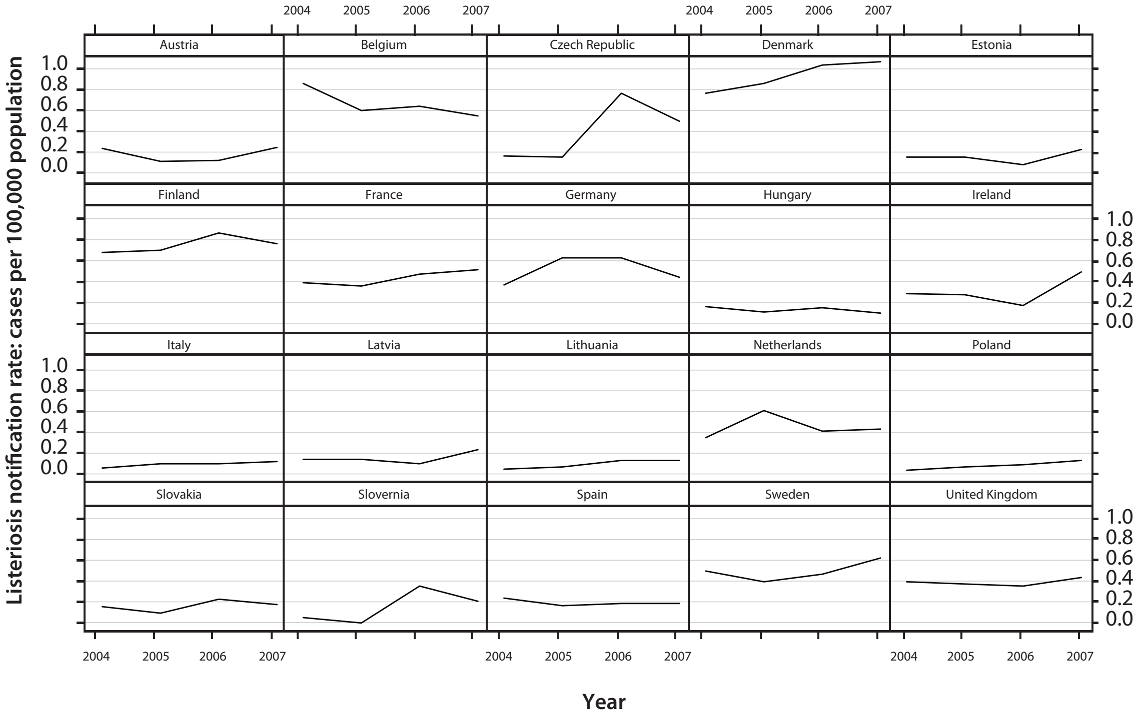
Within each reporting MS, the only statistically significant and increasing trend in listeriosis notification rates from 2004 to 2007 was noted in Poland (Figure LI1b).

Figure LI1a. | ***Notification rates of reported confirmed cases of human listeriosis in the EU, 2004-2007***[1]



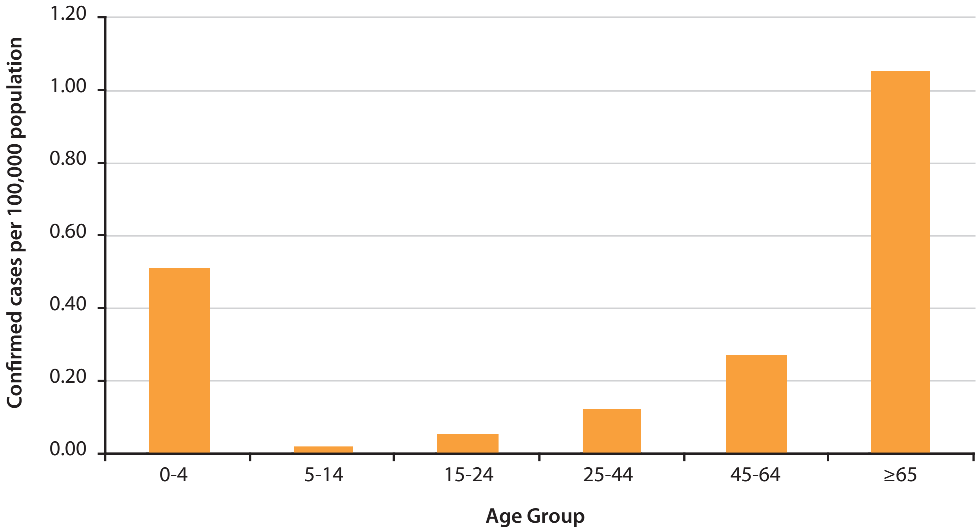
Source: AT, BE, CZ, DK, EE, FI, FR, DE, GR, HU, IE IT, LV, LI, NL, PL, SK, SI, ES, SE, UK
1. Includes total cases for 2004 and confirmed cases from 2005-2007

Figure LI1b. ***Notification rates of reported confirmed cases of listeriosis in human per MS (cases per population of 100,000, 2004-2007)***



The age distribution of listeriosis cases in 2007 was similar to that observed in previous years. The notification rate was highest in those aged over 65 (1.0 cases per population of 100,000) followed by children under the age of five (0.51 cases per population of 100,000) (Figure LI2). The majority of cases, approximately 85%, in the 0-4 year category, were in newborns (age 0). The majority of infections were reported in those aged over 65 (representing 53.1% of cases), followed by the age group 45 to 64 (25.0%).

Figure LI2. ***Age-specific distribution of reported confirmed cases of human listeriosis, TESSy data for reporting MSs, 2007***



Source: All EU MSs except CY, MT, PT and RO (N = 1,554)

Out of 616 confirmed cases where the transmission route was stated (i.e. ca 40% of total confirmed listeriosis cases), 42 cases were infected with listeriosis via food and 13 cases were pregnancy associated. The remaining cases were reported as unknown transmission.

Disease outcome was reported at 1,090 confirmed cases out of which 295 had an unknown outcome. Of the remaining, 160 cases died (20% of cases with known outcome). The majority of fatalities (107 cases) were reported in the over 65 age group.

In total, 68.1% of all known *L. monocytogenes* cases in the EU in 2007 were reported to be of domestic origin, though 29.9% of all reported cases were of unknown origin. The Netherlands reported the highest proportion of imported cases at 11.8%.

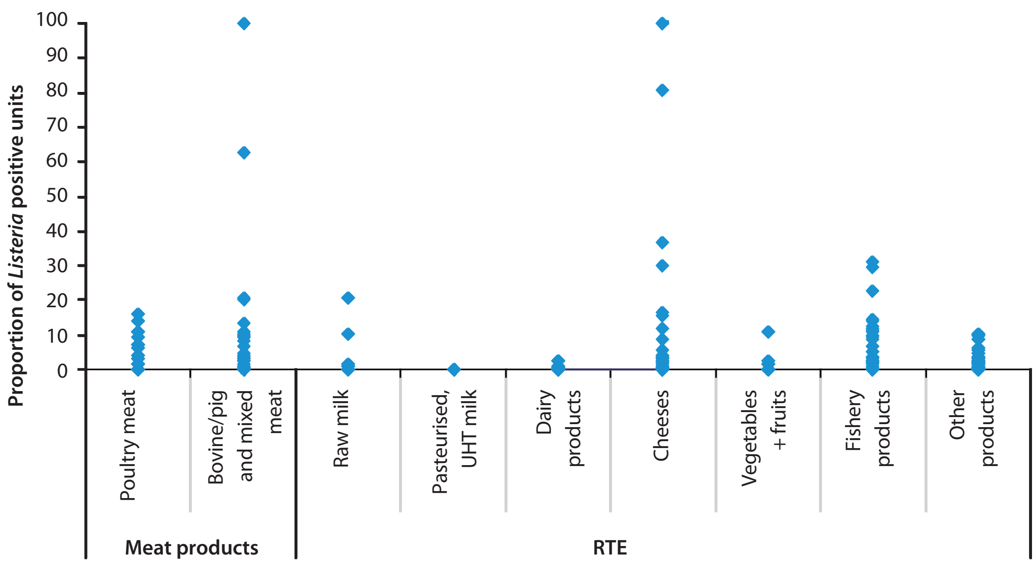
3.3.2 *Listeria* in food

The Community legislation (Regulation (EC) No 2073/2005) lays down food safety criteria for *Listeria* in ready-to-eat foods (RTE). This regulation came into force in January 2006. According to provisions *L. monocytogenes* must not be present in levels above 100 cfu/g during the shelf life of a product. In addition, products, in which the growth of the bacterium is possible, must not contain *L. monocytogenes* in 25g at the time when they leave the production plant unless the producer can demonstrate, to the satisfaction of the competent authority, that the product will not exceed the 100 cfu/g limit throughout shelf life. This Regulation is reflected in the data reported from MSs, and investigations have focussed on testing RTE foods for compliance with these limits.

Data on *L. monocytogenes* in 25 or more samples of food were reported by 21 MSs and one non-MS. These data cover a substantial number of food samples and food categories. The data presented focusses on RTE foods, where *L. monocytogenes* were detected either by qualitative (absence or presence) or quantitative (enumeration) investigations (findings of *L. monocytogenes* with more than 100 cfu/g) or both.

Figure LI3 provides an overview of the proportions of positive samples, from investigations of different food categories. As in previous years the majority of samples were collected from meat and fishery products and cheeses.

Figure LI3. | ***Proportions of* Listeria *positive samples by ready-to-eat food category*[1]*, 2007***



Note: Data are only presented for sample size ≥25

1. Each point representing a MS observation

Ready-to-eat meat products, meat preparations and minced meat

Data on examinations for *L. monocytogenes* in ready-to-eat (RTE) meat products and other RTE products of meat were available from 18 MSs. Data categorised according to the origin of the meat are presented in Tables LI3a-c. The majority of the reported data concerned products from pig meat (Figure LI4).

Data on RTE meat products and meat preparations of bovine origin, reported by 11 MSs, is summarised in Table LI3a. Three MSs found *L. monocytogenes* present in 25g. Furthermore, Belgium and Slovenia reported findings of more than 100 cfu/g in meat preparations. These meat preparations were of raw meat intended to be eaten raw. The number of investigated samples and reported positive findings has decreased by almost 50% compared to data reported for 2006, but correspond well with the results reported in 2005.

Data on RTE products from pig meat was provided by 15 MSs and RTE products from red, mixed and unspecified meat was provided from six MSs (Table LI3b). In pig meat products the proportions of positive samples from qualitative investigations for *L. monocytogenes* were generally low, ranging from 0% to 9.6%. However, five MSs reported *L. monocytogenes* in moderate to high proportions of positive samples, ranging from 10.6% to 62.9% of investigated samples. Samples of pig meat products exceeding the 100 cfu/g limit were reported by eleven MSs, with proportions of samples above the limit varying from very low to low (up to 3.8%). Italy and Slovenia accounted for the highest proportion of samples exceeding 100 cfu/g.

In red, mixed and unspecified meats the proportions of positive samples from qualitative investigations for *L. monocytogenes* was low; ranging from 0% to 4.0%. Four out of six MSs reported findings of *L. monocytogenes*. Samples of red, mixed and unspecified meat products exceeding the 100 cfu/g limit were reported by three MSs, with proportions of samples above the limit varying from very low to low (up to 2.6% in the Czech Republic).

Data on RTE food from broiler or other poultry meat were reported by 11 MSs, and the results are presented in Table LI3c. *L. monocytogenes* were detected qualitatively in samples of RTE poultry meats, ranging from 0% to 16.2%. However *L. monocytogenes* were only found in levels above 100 cfu/g in two of ten investigations. Germany and Ireland reported that 0.5% and 0.2% of the samples contained >100 cfu/g, respectively. These findings correspond well to observations from 2006.

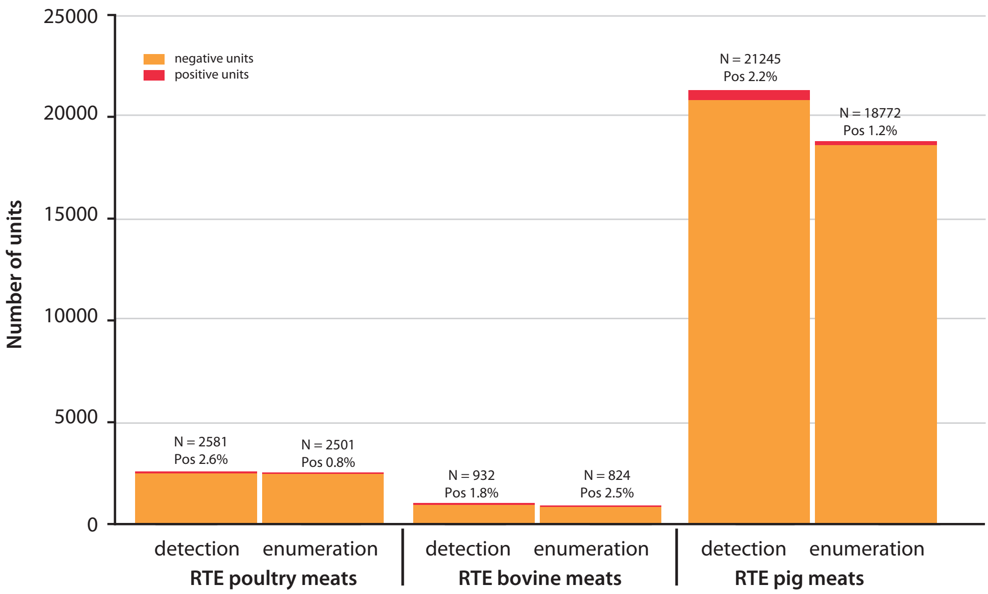
Overall, *L. monocytogenes* is rarely isolated in RTE meat products or other RTE products of meat origin. There do not seem to be any major differences between the detection rates of *L. monocytogenes* in RTE products made from pig meat, bovine meat or poultry meat (Figure LI4). However, the few cases in which *L. monocytogenes* was reported from products of bovine meat origin in 2007, was in fact from products of raw meat.

Table LI3a. | **L. monocytogenes** ***in ready-to-eat meat products and meat preparations of bovine meat, 2007***

Country	Sampling unit	Details	Units Tested Presence	*L. m.* presence in 25 g	Units Tested Enumeration	> detection but ≤ 100 cfu/g	*L. m.* > 100 cfu/g
			N	% Pos	N	%	%
Belgium	Single	Meat preparation, intended to be eaten raw, at retail	-	-	157	0.6	3.2
	Single	Minced meat, intended to be eaten raw, at retail	-	-	159	1.3	0
Bulgaria	Single	Meat products, RTE, at processing	138	0	-	-	-
Czech Republic	Batch	Meat products, RTE, at processing	54	0	-	-	-
Greece	Single	Meat products, RTE, at retail	31	3.2	-	-	-
Ireland	Single	Meat products, RTE, at retail	197	3.0	324	0	0
Italy	Single	Meat product, RTE	139	0	-	-	-
Netherlands	Single	Meat products, RTE, at retail, raw and intended to be eaten raw	-	-	28	10.7	0
	Single	Meat products, RTE	-	-	56	0	0
Poland	Single	Meat products, RTE	-	-	50	0	0
Romania	Batch	Meat products, RTE, at processing	232	0	-	-	-
Slovakia	Batch	Meat products	91	0	-	-	-
Slovenia	Single	Meat preparation, intended to be eaten raw, at retail	50	20.0	50	18.0	2.0
Total (11 MSs)			**932**	**1.8**	**824**	**1.8**	**0.7**

Note: Data are only presented for sample size ≥25

Figure LI4. | ***Proportion of*** **L. monocytogenes** ***positive units in ready-to-eat meat categories in the EU, 2007***[1]



Note: Test results obtained with detection and enumeration methods are presented separately. N: Total number of tested units

1. Pooled data from MSs, covers both single and batch samples, only investigations covering 25 or more samples are included

Table LI3b. | **L. monocytogenes** ***in ready-to-eat meat products and meat preparations of pig meat and red, mixed or unspecified meat, 2007***

Country	Sampling unit	Details	Units Tested Presence	*L. m.* presence in 25 g	Units Tested Enumeration	> detection but ≤ 100 cfu/g	*L. m.* > 100 cfu/g
			N	% Pos	N	%	%
Pig meat							
Austria	Single	Meat products, RTE, at retail	219	9.1	219	8.7	0.5
Belgium	Single	Meat products, RTE, at retail	-	-	124	0	0
	Single	Meat products, RTE, at processing	58	1.7	-	-	-
Bulgaria	Single	Meat products, RTE, at processing	4,174	0.3	-	-	-
Czech Republic	Batch	Meat products, RTE, at retail	36	2.8	-	-	-
	Batch	Meat products, RTE, at processing	4,144	0.6	8,146	0.3	0.2
Estonia	Single	Meat products, RTE, at processing	83	9.6	9	0	0
Germany	Single	Meat products, RTE, at processing	236	11.0	247	2.4	0.4
	Single	Meat products, RTE, at retail	731	2.6	822	0.5	0.2
	Single	Meat products, fermented sausages, at retail	517	8.5	598	1.2	0.2
Greece	Single	Meat products, RTE, at retail	29	20.7	-	-	-
	Single	Meat products, RTE, at processing	62	0	-	-	-
Ireland	Single	Meat products, RTE, at processing	59	0	-	-	-
	Single	Meat products, RTE, at retail	568	3.0	895	0.2	0
Italy	Single	Meat products, RTE	972	13.6	239	0	3.8
	Batch	Meat products, RTE	500	0	93	96.8	3.2
Poland	Single	Meat products, RTE, at retail	5,373	2.8	6,417	0.6	0.1
	Single	Meat products, RTE, at processing	97	62.9	25	0	0
Portugal	Batch	Meat products, RTE, at retail	-	-	330	0	1.2
Romania	Batch	Meat products, RTE, at processing	2,108	0	-	-	-
Slovakia	Batch	Meat products	61	6.6	35	0	0
	Batch	Meat products	87	4.6	-	-	-
	Batch	Meat products, RTE	671	0.4	183	0	0
Slovenia	Batch	Meat products, RTE	42	16.7	42	14.3	2.4
Spain	Single	Meat products, RTE, at retail	418	4.1	348	5.5	0.9
Total (pig meat) (15 MSs)			**21,245**	**2.2**	**18,772**	**0.9**	**0.2**
Red, mixed or unspecified meat							
Austria	Single	Mixed meat product, RTE, at retail	133	0	133	0	0
Czech Republic	Batch	Mixed meat product, RTE, at retail	-	-	76	0	2.6
Denmark	Single	Mixed meat product, at retail	68	2.9	735	0.4	0.3
Estonia	Single	Mixed meat product, RTE, at processing	60	0	-	-	-
Ireland	Single	Meat products, RTE, cooked at retail	38	0	54	0	0
	Single	Meat products, RTE, at retail	152	2.6	226	0	0
	Single	Mixed meat product, RTE, at retail	25	4.0	46	0	0
	Single	Sheep meat products, RTE, at retail	-	-	27	0	0
United Kingdom	Single	Meat products, RTE, at retail	2,168	2.8	2,168	0.3	0.8
Total (red, mixed or unspecified meat) (6 MSs)			**2,644**	**2.5**	**3,465**	**0.3**	**0.6**

Table LI3c. | **L. monocytogenes** ***in ready-to-eat meat products and meat preparations of poultry meat, 2007***

Country	Sampling unit	Details	Units Tested Presence	*L. m.* presence in 25 g	Units Tested Enumeration	> detection but ≤ 100 cfu/g	*L. m.* > 100 cfu/g
			N	% Pos	N	%	%
Poultry meat							
Bulgaria	Single	Broiler meat products, RTE, cooked, at processing	171	0	-	-	-
Czech Republic	Batch	Broiler meat products, RTE, cooked, at processing	161	7.5	400	0	0
	Batch	Broiler meat products, RTE, at retail	36	11.1	-	-	-
Estonia	Single	Broiler meat products, RTE, cooked, at retail	-	-	28	0	0
	Single	Broiler meat products, RTE, cooked, at processing	30	3.3	-	-	-
Germany	Single	Broiler meat products, RTE, cooked, at processing	111	16.2	107	7.5	0
	Single	Broiler meat products, RTE, cooked, at retail	152	9.2	185	1.6	0.5
Greece	Single	Broiler meat products, RTE, at retail	43	14.0	-	-	-
Ireland	Single	Broiler meat products, RTE, at processing	69	0	-	-	-
	Single	Broiler meat products, RTE, at retail	629	1.6	983	0	0.2
	Single	Turkey meat products, ready to eat, cooked, at processing	58	0	-	-	-
	Single	Turkey meat products, RTE, cooked, at retail	93	0	140	0	0
	Single	Meat products, RTE, at processing	50	0	-	-	-
Latvia	Single	Broiler meat products, RTE, at processing	54	0	0	0	0
Poland	Single	Broiler meat products, RTE	536	1.9	580	0.2	0
Romania	Batch	Broiler meat products, RTE, cooked, at processing	295	0	-	-	-
Slovakia	Batch	Broiler meat products, RTE, cooked	62	0	33	0	0
Spain	Single	Broiler meat products, RTE, cooked, at retail	31	6.5	45	11.1	0
Total (11 MSs)			**2,581**	**2.6**	**2,501**	**0.7**	**0.1**

Note: Data are only presented for sample size ≥25

Milk and dairy products

In 2007, 14 MSs reported large amounts of data on *L. monocytogenes* in cheeses (Tables LI4a-d and Figure LI5) and other ready-to-eat (RTE) dairy products.

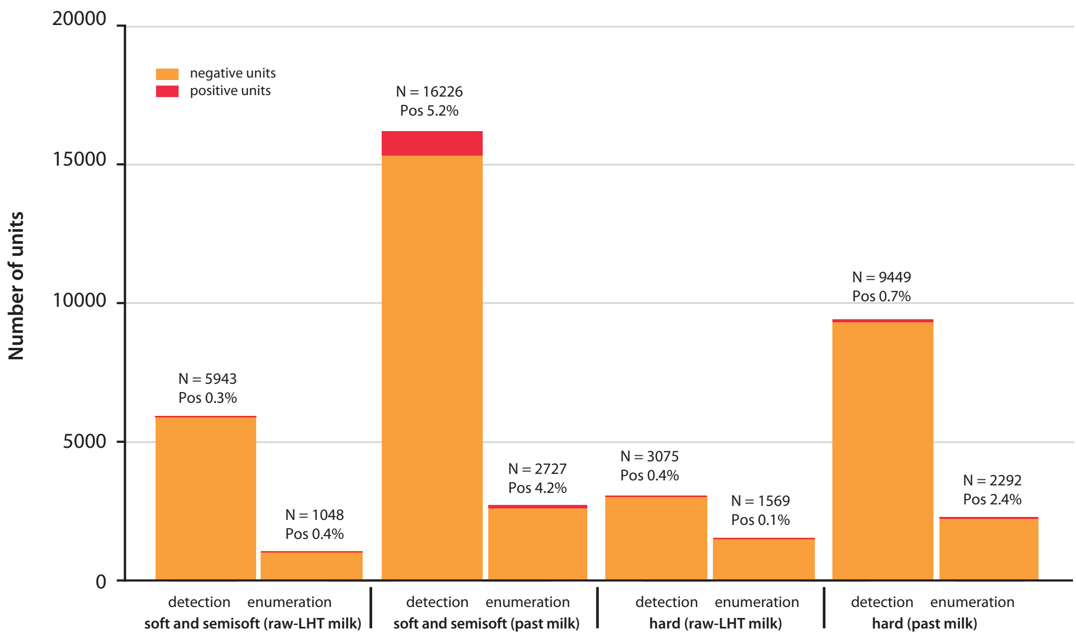
The presence of *L. monocytogenes* was detected in about half of the reported qualitative investigations of cheeses made from cow's milk (Table LI4a). For those investigations with positive findings, the proportions of positive samples were generally low ranging from 0.1% to 3.2%.

The data concerning cheeses made from sheep or goat milk show comparable low proportions of presence of *L. monocytogenes*, generally ranging from 0.4% to 4.4%. Proportions of positive samples containing levels of *L. monocytogenes* exceeding 100 cfu/g were also generally not observed or very low, 1.0% in a Portuguese investigation and 1.6% in one Italian investigation. However, Germany reported investigations of hard cheeses made from pasteurised sheep's milk where the presence of *L. monocytogenes* was found in 36.8% of samples, and where 19.3% of the units were found to contain levels above 100 cfu/g (Table LI4d).

It appears that the presence of *L. monocytogenes* in cheeses is quite seldom detected in EU MSs, and numbers only rarely reach levels above 100 cfu/g. Nevertheless, the bacterium was isolated both from cheeses made from raw or low heat treated milk and pasteurised milk as well as from soft/semi-soft cheeses and hard cheeses (Figure LI5). In data for 2007, *L. monocytogenes* was most often detected in soft and semi-soft cheeses made from pasteurised milk. However, the data does not allow inference to be made in reference to the level of contamination of cheese and other dairy products with regard to the animal species from which the milk originated.

It is interesting to note that hard cheeses that are usually considered as not supporting the growth of *L. monocytogenes* may sometimes allow the growth, as illustrated by the German investigation of hard sheep's cheese made from the pasteurised milk mentioned above. The growth may be possible for example in surface-ripened hard cheeses at least at the beginning of the ripening process. It is therefore essential that the categorisation of foodstuffs in those supporting the growth of *L. monocytogenes* and in those not supporting the growth is determined on a case-by-case basis.

Figure LI5. | ***Proportion of* L. monocytogenes *positive units in soft and semi-soft cheeses and hard cheeses made from raw or low heat-treated milk and pasteurised milk in the EU, 2007*[1]**



Note: Test results obtained with detection and enumeration methods are presented separately

1. Pooled data from MSs, covers both single and batch samples, only investigations covering 25 or more samples are included
N: total number of tested units
LHT: low heat-treated milk; past. milk: pasteurised milk

Table LI4a. | **L. monocytogenes *in soft and semi-soft cheeses made from raw or low heat treated milk, 2007***

Country	Sampling unit	Details	Units Tested Presence	*L. m.* presence in 25 g	Units Tested Enumeration	> detection but ≤ 100 cfu/g	*L. m.* > 100 cfu/g
			N	% Pos	N	%	%
Cheeses made from milk from cows							
Austria	Single	Raw or low heat-treated milk, at processing	114	0	114	0	0
	Single	Raw or low heat-treated milk, at retail	54	0	54	0	0
Belgium	Single	Raw or low heat-treated milk, at retail	-	-	83	0	0
Bulgaria	Single	Raw or low heat-treated milk, at processing	3,314	0.1	-	-	-
Germany	Single	Raw or low heat-treated milk, at processing	40	0	-	-	-
	Single	Raw or low heat-treated milk, at retail	31	3.2	49	2.0	0
Italy	Single	Raw or low heat-treated milk	194	0.5	-	-	-
Poland	Single	Raw or low heat-treated milk, at processing	123	0	-	-	-
Portugal	Single	Raw or low heat-treated milk, at retail	-	-	40	-	-
Romania	Batch	Raw or low heat-treated milk, at processing	70	0	-	-	-
	Batch	Raw or low heat-treated milk, at retail	939	0	-	-	-
Slovakia	Batch	Raw or low heat-treated milk	-	-	52	0	0
Total (cheeses made from milk from cows) (9 MSs)			**4,879**	**0.1**	**392**	**0.3**	**0**
Cheeses made from milk from sheep and goats							
Austria	Single	Sheep milk, raw or low heat-treated, at retail	31	0	31	0	0
Belgium	Single	Goat milk, raw or low heat-treated, at retail	-	-	25	0	0
	Single	Sheep milk, raw or low heat-treated, at retail	-	-	25	0	0
	Single	Unspecified milk, raw or low heat-treated, at processing	48	0	-	-	-
Bulgaria	Single	Sheep milk, raw or low heat-treated, at processing	170	0	-	-	-
Italy	Single	Goat milk, raw or low heat-treated	61	3.3	64	0	1.6
	Single	Sheep milk, raw or low heat-treated	91	4.4	87	0	0
Portugal	Single	Mixed milk	90	3.3	-	-	-
	Batch	Goat milk, raw or low heat-treated, at retail	-	-	52	0	0
	Batch	Sheep milk, raw or low heat-treated, at retail	-	-	103	1.0	1.0
Romania	Batch	Sheep milk, raw or low heat-treated, at processing	94	0	-	-	-
Slovakia	Batch	Sheep milk, raw or low heat-treated	479	0.4	269	0	0
Total (cheeses made from milk from sheep and goats) (7 MSs)			**1,064**	**1.0**	**656**	**0.2**	**0.3**

Table LI4b. | **L. monocytogenes** ***in soft and semi-soft cheeses made from pasteurised milk, 2007***

Country	Sampling unit	Details	Units Tested Presence N	*L. m.* presence in 25 g % Pos	Units Tested Enumeration N	> detection but ≤ 100 cfu/g %	*L. m.* > 100 cfu/g %
Cheeses made from milk from cows							
Austria	Single	Pasteurised milk	74	2.7	74	2.7	0
	Single	Pasteurised milk, at processing	139	0	139	0	0
	Single	Pasteurised milk, at retail	140	0.7	140	0.7	0
Bulgaria	Single	Pasteurised milk, at processing	1,282	0	-	-	-
Czech Republic	Batch	Pasteurised milk, at processing	9,370	8.6	80	100	0
	Batch	Pasteurised milk, at retail	-	-	86	3.5	0
Germany	Single	Pasteurised milk, at processing	41	2.4	-	-	-
	Single	Pasteurised milk, at retail	337	0	280	0	0
Hungary	Batch	Pasteurised milk, at processing	285	0	-	-	-
Italy	Single	Pasteurised milk	362	4.4	-	-	-
	Batch	Pasteurised milk	-	-	26	100.0	0
Netherlands	Single	Pasteurised milk, at retail	-	-	26	3.8	0
Poland	Single	Pasteurised milk, at processing	1,799	0	569	0	0
Portugal	Batch	Pasteurised milk, at retail	-	-	122	0	0
Slovakia	Batch	Pasteurised milk	686	3.4	213	0	0.5
Total (cheeses made from milk from cows) (10 MSs)			**14,515**	**5.8**	**1,755**	**6.4**	**0.1**
Switzerland	Single	Pasteurised milk, at processing	137	0	-	-	-
Cheeses made from milk from sheep and goats							
Belgium	Single	Unspecified milk, pasteurised, at processing	136	0	-	-	-
Bulgaria	Single	Goat milk, pasteurised, at processing	68	0	-	-	-
	Single	Sheep milk, pasteurised, at processing	275	0	-	-	-
Czech Republic	Batch	Sheep milk, pasteurised, at processing	31	0	-	-	-
Hungary	Batch	Sheep milk, pasteurised, at retail	114	0	-	-	-
Ireland	Batch	Unspecified milk or other animal milk, pasteurised, at processing	35	0			
Romania	Batch	Sheep milk, pasteurised, at processing	38	0	-	-	-
Slovakia	Batch	Mixed milk, pasteurised	259	1.5	233	0	0
	Batch	Sheep milk, pasteurised, at processing	33	0	17	0	0
United Kingdom	Single	Unspecified milk, at retail	722	0	722	0	0
Total (cheeses made from milk from sheep and goats) (8 MSs)			**1,711**	**0.5**	**972**	**0**	**0**

Table LI4c. | **L. monocytogenes *in hard cheeses made from raw or low heat treated milk, 2007***

Country	Sampling unit	Details	Units Tested Presence	*L. m.* presence in 25 g	Units Tested Enumeration	> detection but ≤ 100 cfu/g	*L. m.* > 100 cfu/g
			N	% Pos	N	%	%
Cheeses made from milk from cows							
Austria	Single	Raw or low heat-treated milk, at processing	137	0	137	0	0
	Single	Raw or low heat-treated milk, at retail	96	0	96	0	0
Bulgaria	Single	Raw or low heat-treated milk, at processing	334	0	-	-	-
Czech Republic	Batch	Raw or low heat-treated milk, at processing	26	0	-	-	-
Germany	Single	Raw or low heat-treated milk, at processing	48	0	31	0	0
	Single	Raw or low heat-treated milk, at retail	161	5.6	67	1.5	0
Italy	Single	Raw or low heat-treated milk	408	0.7	-	-	-
Poland	Single	Raw or low heat-treated milk, at processing	150	0	-	-	-
Romania	Batch	Raw or low heat-treated milk, at processing	73	0	-	-	-
United Kingdom	Single	Raw or low heat-treated milk, at retail	1,238	0.2	1,238	0	0
Total (cheeses made from milk from cows) (8 MSs)			**2,671**	**0.4**	**1,569**	**0.1**	**0**
Switzerland	Single	Raw or low heat-treated milk, at processing	167	1.2	-	-	-
Cheeses made from milk from sheep and goats							
Bulgaria	Single	Sheep milk, raw or low heat-treated, at processing	404	0	-	-	-

Table LI4d. | **L. monocytogenes *in hard cheeses made from pasteurised milk, 2007***

Country	Sampling unit	Details	Units Tested Presence	*L. m.* presence in 25 g	Units Tested Enumeration	> detection but ≤ 100 cfu/g	*L. m.* > 100 cfu/g
			N	% Pos	N	%	%
Cheeses made from milk from cows							
Bulgaria	Single	Pasteurised milk, at processing	3,089	0	-	-	-
Czech Republic	Batch	Pasteurised milk, at processing	138	2.9	-	-	-
Germany	Single	Pasteurised milk, at processing	471	1.1	232	0.9	0
	Single	Pasteurised milk, at retail	2,227	1.3	1,617	0.4	0.2
Netherlands	Single	Pasteurised milk, at retail	-	-	49	2	0
Poland	Single	Pasteurised milk, at processing	809	0	126	0	0
Romania	Batch	Pasteurised milk, at processing	1,327	0	-	-	-
Slovakia	Batch	Pasteurised milk	194	0	56	0	0
Total (cheeses made from milk from cows) (7 MSs)			**8,255**	**0.5**	**2,080**	**0.5**	**0.1**
Cheeses made from milk from sheep and goats							
Bulgaria	Single	Goat milk, pasteurised, at processing	91	0	-	-	-
	Single	Sheep milk, pasteurised, at processing	53	0	-	-	-
Germany	Single	Goat milk, pasteurised, at processing	63	0	30	0	0
	Single	Goat milk, pasteurised, at retail	89	0	36	0	0
	Single	Sheep milk, pasteurised, at processing	76	36.8	57	10.5	19.3
	Single	Sheep milk, pasteurised, at retail	98	1.0	63	0	0
Greece	Single	Goat milk, pasteurised, at processing	186	0	-	-	-
	Single	Sheep milk, pasteurised, at retail	97	1.0	-	-	-
Italy	Single	Sheep milk, pasteurised	53	0	-	-	-
	Batch	Goat milk, pasteurised	-	-	26	100	0
Romania	Batch	Sheep milk, pasteurised, at processing	388	0	-	-	-
Total (cheeses made from milk from sheep and goats) (5 MSs)			**1,194**	**2.5**	**212**	**15.1**	**5.2**

Fishery products

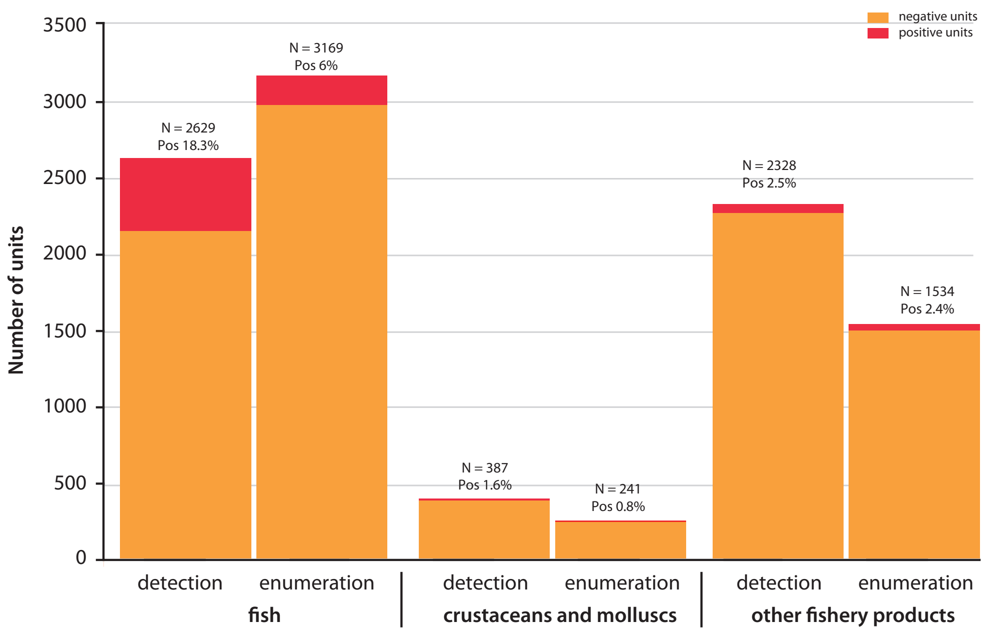
In 2007, 15 MSs and one non-MS reported data on findings of *L. monocytogenes* in ready-to-eat (RTE) fishery products (Table LI5). The products tested were mainly smoked fish products. Eleven MSs provided quantitative data. The reported results per product category are illustrated in Figure LI6.

The highest proportions of positive samples of fishery products (qualitative examinations) were reported by Poland (29.6%), the Netherlands (22.6%), Italy (14.5%), the Czech Republic (13.8%) and Germany (11.4% and 9.3% at retail and processing, respectively), all were found in smoked fish.

The highest frequencies of samples with more than 100 cfu/g were reported by the Czech Republic, with 18.8% in samples of smoked fish from processing and the Netherlands with 4.6% of smoked fish samples from retail.

As in previous years, the highest proportions of *L. monocytogenes* positive samples, as well as the highest proportions of samples with more than 100 cfu/g, were found in RTE fish and fishery products. Smoked fish appears to be a food item that most often harbours *L. monocytogenes*, and also the food category that most often contains *L. monocytogenes* in levels exceeding 100 cfu/g.

Figure LI6. | ***Proportion of* L. monocytogenes *positive units in ready-to-eat fishery products categories in the EU, 2007[1]***



Note: Test results obtained with detection and enumeration methods are presented separately. N: total number of tested units

1. Pooled data from MSs, covers both single and batch samples, only investigations covering 25 or more samples are included

Table LI5. | **L. monocytogenes *in ready-to-eat fishery products, 2007***

Country	Sampling unit	Details	Units Tested Presence	*L. m.* presence in 25 g	Units Tested Enumeration	> detection but ≤ 100 cfu/g	*L. m.* > 100 cfu/g
			N	% Pos	N	%	%
Fish							
Belgium	Single	Smoked salmon, at retail	-	-	150	1.3	1.3
Bulgaria	Single	Smoked, at processing	130	1.5	-	-	-
Czech Republic	Batch	Smoked, at processing	240	13.8	80	12.5	18.8
	Batch	Smoked, at retail	-	-	68	5.9	5.9
Germany	Single	Smoked, at processing	172	9.3	165	1.2	0.6
	Single	Smoked, at retail	447	11.4	622	1.6	1.6
Italy	Single	Smoked	131	14.5	-	-	-
	Batch	Smoked	-	-	41	2.4	0
Netherlands	Single	Smoked, at retail	709	22.6	820	4.3	4.6
Poland	Single	Marinated	51	0	-	-	-
	Single	Smoked	676	29.6	1,098	4.6	0.5
Portugal	Batch	Smoked, at retail	-	-	35	0	0
Romania	Batch	Smoked, at processing	73	0	-	-	-
Slovakia	Batch	Smoked	-	-	90	0	2.2
Total (fish) (10 MSs)			**2,629**	**18.3**	**3,169**	**3.6**	**2.4**
Crustaceans							
Bulgaria	Single	RTE, at processing, cooked	150	0	-	-	-
Germany	Single	RTE, at retail, cooked	210	2.4	241	0.4	0.4
Molluscan shellfish							
Greece	Single	Cooked, at retail	27	3.7	-	-	-
Fishery products, unspecified							
Austria	Single	At retail	166	6.6	166	6.6	0
	Single	-	26	3.8	26	3.8	0
Estonia	Single	RTE, at processing	77	2.6	-	-	-
Germany	Single	At retail	1,008	14.7	779	1.4	1.3
Ireland	Single	At retail	-	-	97	0	0
	Single	At processing	35	0	-	-	-
	Single	Smoked, at retail	32	9.4	52	0	1.9
	Single	Cooked, at retail	226	2.2	298	0	0
Slovakia	Batch	-	105	1.9	116	0	0
Spain	Single	RTE	653	5.2	-	-	-
Total (6 MSs)			**2,328**	**2.5**	**1,534**	**1.6**	**0.8**
Norway	Single	Smoked, at processing	70	0	-	-	-

Note: Data are only presented for sample size ≥25

Other ready-to-eat products

A substantial number of investigations were reported on *L. monocytogenes* in other RTE products (Table LI6). The data presented in Table LI6 is divided into the categories "Sandwiches and other processed foods", "RTE salads", "Fruit and/or vegetables", and "Bakery products".

For other RTE products, some data originated from investigations of various sandwiches. Four MSs reported investigations of sandwiches. The United Kingdom reported a large survey on RTE sandwiches finding 5.8% of the 1,088 samples tested containing *L. monocytogenes*, and 0.4% in levels above 100 cfu/g. The Czech Republic investigated samples of meat-containing sandwiches and reported 10.2% of them positive for *L. monocytogenes*. Slovenia found 2.0% of the sandwich samples positive and Greece none.

A large investigation in Spain of processed foods and prepared dishes found samples exceeding 100 cfu/g in 0.6% of 4,992 samples positive by qualitative analyses and 0.9% of 1,269 by quantitative analysis. Ireland reported 2.3% of 1,419 samples of processed foods positive, with only 0.1% of 2,567 samples containing more than 100 cfu/g.

L. monocytogenes was detected only occasionally in salads, and in fruit and vegetables as well as in RTE salads by qualitative analysis, but not in levels exceeding 100 cfu/g. The organism was only detected on one occasion in bakery products (qualitative investigations).

Table LI6. | **L. monocytogenes *in other ready-to-eat products, 2007***

Country	Sampling unit	Details	Units Tested Presence	*L. m.* presence in 25 g	Units Tested Enumeration	> detection but ≤ 100 cfu/g	*L. m.* > 100 cfu/g
			N	% Pos	N	%	%
Sandwiches and other processed food							
Austria	Single	Unspecified	78	0	78	0	0
Czech Republic	Batch	Sandwiches with meat, at processing	704	10.2	-	-	-
Estonia	Single	At processing, unspecified	52	3.8	-	-	-
	Single	At retail, unspecified	-	-	33	0	0
Greece	Single	At retail, sandwiches	28	0	-	-	-
	Single	At retail, other processed food and prepared dishes, unspecified	157	0.6	-	-	-
Ireland	Single	At retail, unspecified	-	-	29	0	0
	Single	At retail, unspecified, RTE	1,419	2.3	2,567	0[1]	0.1
Poland	Single	Unspecified	146	1.4	536	2.2	2
Slovakia	Batch	Unspecified	110	6.4	40	0	0
Slovenia	Single	At retail, sandwiches	50	2	50	2	0
	Single	At retail, unspecified, RTE	550	2.7	550	2.5	1
Spain	Single	Unspecified	4,992	0.6	1,269	1.3	0.9
United Kingdom	Single	At retail, sandwiches	1,088	5.8	1,088	0.8	0.4
Total (sandwiches and other processed food) (10 MSs)			**9,374**	**2.4**	**6,240**	**0.9**	**0.5**

Table LI6. | **L. monocytogenes *in other ready-to-eat products, 2007 (ctntd.)***

Country	Sampling unit	Details	Units Tested Presence	*L. m.* presence in 25 g	Units Tested Enumeration	> detection but ≤ 100 cfu/g	*L. m.* > 100 cfu/g
			N	% Pos	N	%	%
RTE salads							
Czech Republic	Batch	With mayonnaise, RTE, at processing	519	4.6	111	9.9	0
	Batch	With mayonnaise, RTE, at retail	-	-	167	0	0
Estonia	Single	RTE, at processing	46	8.7	-	-	-
	Single	RTE, at retail	38	0	97	3.1	0
Portugal	Batch	RTE, at retail	-	-	165	0	0
Total (RTE salads) (3 MSs)			**603**	**4.6**	**540**	**2.6**	**0**
Fruit and/or vegetables							
Czech Republic	Batch	Pre-cut, RTE, at retail	36	11.1	-	-	-
Denmark	Single	At retail	-	-	60	0	0
Estonia	Single	At processing	28	0	-	-	-
Ireland	Single	At retail	164	2.4	316	0	0
Netherlands	Single	At retail	-	-	769	0	0
	Single	Sprouted seeds, at retail	-	-	1,722	0.2	0
Slovakia	Batch		29	0	-	-	-
Slovenia	Single	Pre-cut, RTE, at retail	150	1.3	150	1.3	0
Spain	Single	Pre-cut, RTE	60	0	-	-	-
Total (fruit and/or vegetables) (8 MSs)			**467**	**2.1**	**3,017**	**0.2**	**0**
Bakery products							
Czech Republic	Batch	Cakes containing heat treated cream, at retail	-	-	43	0	0
	Batch	Desserts containing heat treated cream, at processing	281	0.4	-	-	-
	Batch	Desserts containing heat treated cream, at retail	0	0	59	0	0
	Batch	Pastry with egg filling	28	0	-	-	-
Estonia	Single	Cakes, at retail	-	-	59	0	0
Ireland	Single	At retail	93	0	200	0	0
	Single	Desserts, at retail	94	0	141	0	0
Total (bakery products) (3 MSs)			**496**	**0.2**	**502**	**0**	**0**

1. One positive sample

Compliance with microbiological criteria

The *L. monocytogenes* criteria laid down by Regulation (EC) No 2073/2005, cover primarily ready-to-eat food products, and require that:

- in ready-to-eat products intended for infants and for special medical purposes *L. monocytogenes* must not be present in 25 g (n=10, c=0);
- *L. monocytogenes* must not be present in levels above 100 cfu/g during the shelf life of the other ready-to-eat products (n=5, c=0);
- for ready-to-eat food that support the growth of the bacterium, *L. monocytogenes* should not be present in 25g (n=5, c=0) at the time of leaving the production plant. However, if the producer is able to demonstrate, to the satisfaction of the competent authority, that the product will not exceed the limit 100 cfu/g throughout shelf life this criterion does not apply.

For foods that support the growth of *L. monocytogenes*, the microbiological criterion to be applied depends on the stage of the food chain and whether the producer has demonstrated that *L. monocytogenes* will not multiply to levels of 100 cfu/g, or above, during shelf life.

For much of the reported 2007 data on *L. monocytogenes*, it was not evident, whether the RTE food tested was able to support the growth of *L. monocytogenes* or not. This information is difficult to be gathered, as even within the same food category, some products may support growth while others may not, depending on factors such as the pH, water activity and composition of the specific product. Also, no information was available on the demonstrations made by producers on the growth capacity of *L. monocytogenes* in their products. Furthermore, in some cases it was not possible to establish at which stage in the production chain samples were collected.

Due to the difficulties described above, the following assumptions were applied to the analyses:

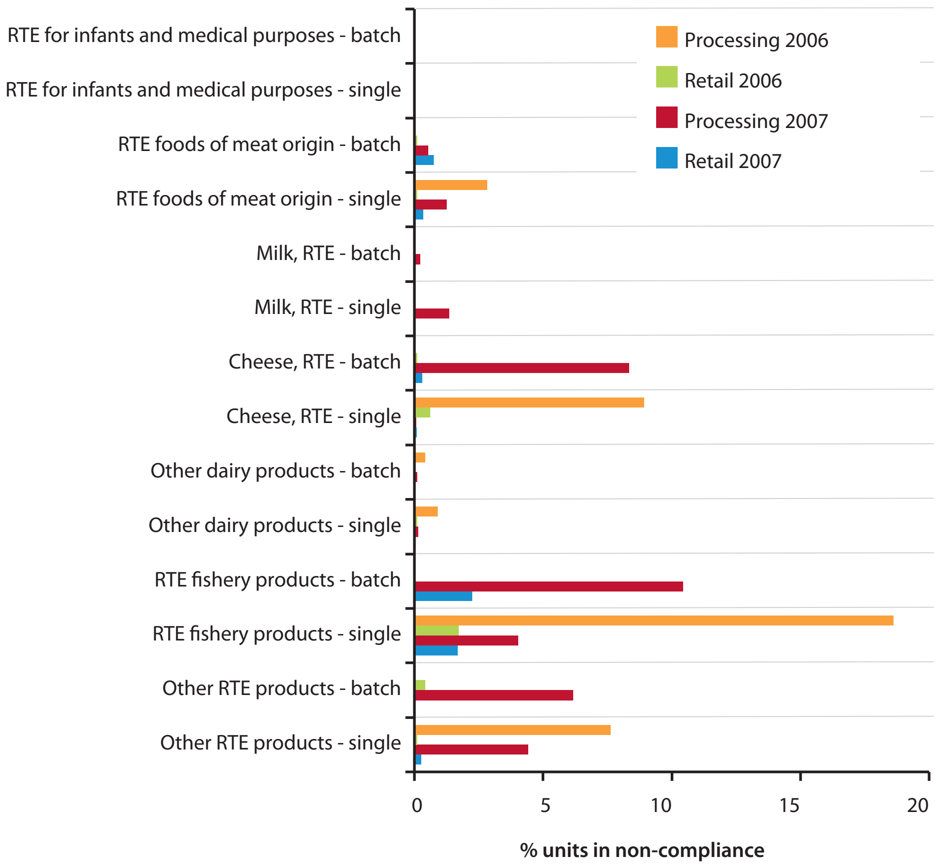
- for samples reported to be taken at processing, a criterion of absence in 25g was applied. Samples from hard cheeses and fermented sausages are an exception which are assumed not to be able to support the growth of *L. monocytogenes*. For these samples the limit <= 100 cfu/g was applied at processing.
- for all investigations, where the sampling stage was not reported, it was assumed that samples have been taken from products placed on the market, and the criterion <= 100 cfu/g was applied.
- for food intended for infants and special medical purposes the criterion absence in 25g was applied throughout the food chain.

The analysis includes all investigations, even those where less than 25 samples have been investigated. However, the results from HACCP and own checks were excluded due to difficulties in interpretation of such results. The results from qualitative examinations have been used to analyse the compliance with criterion: absence in 25g, and the results from quantitative analyses have been used to analyse compliance with the limit 100 cfu/g.

The number of samples in compliance with the *L. monocytogenes* criteria are depicted in Figure LI7.

The results show that at the processing stage, only low proportions of the single tested samples of RTE foodstuffs were found not to comply with the criterion, Table LI7. As in 2006, the highest proportions of non-compliance were reported for RTE fishery products (4.0%), and other RTE products (4.4%). However, the proportions found to be non-compliant with the criterion, were lower in 2007 than in 2006, where similar values were 18.6% for RTE fishery products and 7.6% for other RTE products. In RTE cheeses, together only 0.7% of the investigated single samples was found not to comply with the criterion in 2007 at the processing stage. This was also lower than what was reported in 2006, where 8.9% of the samples were found non-compliant. For batches of RTE products tested at processing, more units were found to be in non-compliance compared to single samples. That is expected since frequently more than one sample (typically five samples) are taken from the tested batch increasing the likelihood of detecting *L. monocytogenes*.

Figure LI7. | ***Proportion of samples[1] in non-compliance with the EU* Listeria *criteria, 2007***



Note: RTE for infants and medical purposes also include food for special nutritional uses

1. Based on single and batch data from retail, including sample units ≥25. Excluding HACCP and own check samples

In the case of RTE products on the market, very low proportions of samples were generally found to be in non-compliance with the criterion of ≤100 cfu/g. However, also at this level, the highest proportions of non-compliance were observed in fishery products. These results are generally in line with the observation for 2005 and 2006, when fishery products were also the RTE food categories most often yielding results over 100 cfu/g.

Table LI7. | ***Compliance with the* L. monocytogenes *criteria laid down by Regulation (EC) No 2073/2005 in food categories in the EU, 2007***

	Sampling unit	Absence in 25 g		≤ 100 cfu/g	
		Units tested	% in non-compliance	Units tested	% in non-compliance
1. RTE food intended for infants and for medical purposes[5]					
1.1 Retail and unspecified[1]	single	196	0	-	-
	batch	124	0	-	-
1.2 Processing[1]	batch	43	0	-	-
2. RTE products of meat origin					
2.1 Retail and unspecified[2]	single	-	-	16,155	0.3
	batch	-	-	1,379	0.7
2.2 Processing[3, 4]	single	5,434	1.2	-	-
	batch	6,994	0.5	-	-
3. Milk, RTE					
3.1 Retail and unspecified[2]	single	-	-	835	0
	batch	-	-	202	0
3.2 Processing[1]	single	299	1.3	-	-
	batch	927	0.2	-	-
4. Cheese, RTE					
4.1 Retail and unspecified[2]	single	-	-	5,864	0.1
	batch	-	-	1,358	0.3
4.2 Processing[3]	single	7,623	0.1	620	1.8
	batch	10,246	8.3	-	-
5. Other dairy products					
5.1 Retail and unspecified[2, 6]	single	-	-	2,757	0[6]
	batch	-	-	590	0
5.2 Processing[1]	single	3,699	0.1	-	-
	batch	1,144	0.1	-	-
6. RTE fishery products					
6.1 Retail and unspecified[2]	single	-	-	4,137	1.7
	batch	-	-	269	2.2
6.2 Processing[1]	single	546	4.0	-	-
	batch	316	10.4	-	-
7. Other RTE products					
7.1 Retail and unspecified[2]	single	-	-	12,349	0.3
	batch	-	-	609	0
7.2 Processing[1]	single	136	4.4	-	-
	batch	1,575	6.2	-	

Note: Including all MS reported data, except data from HACCP and own check.

1. Criteria: Absence in 25g
2. Criteria: Less than 100 cfu/g
3. Criteria: Absence in 25 g, except fermented sausages and hard cheese that must have less than 100 cfu/g
4. No data on fermented sausages at processing level
5. This category also includes food for special nutritional uses
6. One positive sample

3.3.3 | *Listeria* in animals

In 2007, 18 MSs reported data on *Listeria* in animals (Table LI8). *L. monocytogenes* and *Listeria* spp. were detected by several MSs from different animal species, generally at relatively low prevalence. Overall, it appears that the pathogen was most prevalent in sheep, goats and cattle. Germany and Greece found *L. monocytogenes* in goats at a prevalence of approximately 10%, whereas Austria and Estonia isolated *L. monocytogenes* in sheep at a prevalence of around 15%. Estonia also reported the highest prevalence of 11.8% in cattle.

Table LI8. | **Listeria *in animals*[1], *2007***

Sampling unit	*L. monocytogenes*		*Listeria* spp., unspecified	
	Units tested	% Pos	% Pos	Details
***Gallus gallus* (fowl)**				
Germany	2,244	0.1	0	
Ireland	160	0	0	
Lithuania	48	6.3	4.2	Flock based data
Netherlands	1,623	0	0	Flock based data
Slovakia	785	0	0	Poultry unspecified
Total (*Gallus gallus*) (5 MSs)	**4,860**	**0.1**	**0**	
Turkeys				
Ireland	67	0	0	
Netherlands	42	0	0	Flock based data
Ducks				
Bulgaria	31	0	0	
Total (turkeys and ducks) (3 MSs)	**140**	**0**	**0**	
Pigs				
Estonia	91	2.2	0	
Germany	5,266	0[2]	0	
Ireland	418	0	0	
Slovakia	59	0	0	
Total (pigs) (4 MSs)	**5,834**	**0.1**	**0**	
Cattle (bovine animals)				
Estonia	93	11.8	0	
Germany	3,651	2.0	0	
	1,037	2.1	0	Dairy cows
Ireland	590	0.2	0	Dairy cows
Italy	71	0	5.6	
	801	1.6	0.4	Holding
Latvia	488	1.6	0	Dairy cows
Netherlands	1,241	0	1.1	
Slovakia	93	2.2	0	
Spain	68,311	0	0[3]	
Total (cattle) (8 MSs)	**76,376**	**0.2**	**0.05**	

Table LI8. | **Listeria *in animals*[1]*, 2007 (contd.)***

Sampling unit	*L. monocytogenes*		*Listeria* spp., unspecified	
	Units tested	% Pos	% Pos	Details
Goats				
Germany	226	8.9	0	
Greece	30	10.0	0	
Ireland	49	0	0	
Italy	147	0.7	1.4	
	51	0	0	Holding
Latvia	101	0	0	
Netherlands	85	0	9.4	
Total (goats) (6 MSs)	**689**	**3.8**	**1.31**	
Sheep				
Austria	60	16.7	0	
Estonia	29	13.8	0	
Germany	695	5.8	0	
Greece	35	0	0	
Ireland	1,133	0.5	0.4	
Italy	171	0.6	7	
	284	1.1	0.7	Holding
Latvia	339	0.3	0	
Netherlands	171	0	5.8	
Slovakia	56	8.9	0	
Total (sheep) (9 MSs)	**2,973**	**2.4**	**0.6**	

Note: Data are only presented for sample size ≥25

1. Animal based data if nothing else is stated
2. One positive sample
3. Twenty positive samples

3.3.4 Discussion

Human listeriosis is a relatively rare but serious zoonotic disease, with high morbidity and mortality in vulnerable populations. This is also illustrated by the 1,557 confirmed human cases reported in the EU in 2007 and the reported case fatality rate of 20%, that especially affects the elderly. Overall, reported cases of listeriosis increased in the EU between 2003 and 2006, but dropped slightly in 2007. In several MSs though, reported listeriosis cases have increased consecutively over the past five years. Listeriosis is assumed to be mainly a food-borne infection in humans, and therefore, reliable information on the occurrence of *L. monocytogenes* in food is important.

Since *L. monocytogenes* is a ubiquitous organism present in the environment and various animal species, a wide range of different kinds of foodstuffs can be contaminated with the organisms. For the healthy human population, foods that contain less than 100 cfu/g are considered to pose a negligible risk.

A substantial effort was placed on the investigation of *L. monocytogenes* in foods by MSs and a large number of investigations on *L. monocytogenes* in different categories of ready-to-eat (RTE) foods were reported in 2007. These revealed that, as in previous years, proportions of samples exceeding the legal safety limit of 100 cfu/g were rarely found. At EU level the proportions of foodstuffs exceeding this limit varied between 0% and 2.2% in the RTE food categories. The highest proportions were reported in RTE fishery products, particularly in smoked fish, but violations with the limit were also observed in other RTE categories, such as meat products and cheeses. These food categories were also found to be the most contaminated ones in 2006. The findings of *L. monocytogenes* exceeding 100 cfu/g in RTE foods indicate a direct risk for human health.

Reported data on the findings in RTE foods may be used to guide food controls carried out in MSs to ensure compliance with *L. monocytogenes* criteria. The quality of the data received from MSs has improved as regards reporting of the stage of sampling and the use of appropriate test methods that has eased the assessment of compliance with *Listeria* criteria at Community level.

L. monocytogenes was reported from various animal species in 2007, demonstrating that animals act as one reservoir of *Listeria* bacteria although they rarely serve as a direct source of human infections. In some MSs the detected proportion of positive samples was moderate in cattle and in small ruminants.

Tuberculosis due to *Mycobacterium bovis* | 3.4.

Tuberculosis is a serious disease of humans and animals caused by the bacterial species of the family *Mycobacteriaceae*, more specifically by species in the *Mycobacterium tuberculosis* complex. This group includes *Mycobacterium bovis* responsible for bovine tuberculosis, which is also capable of infecting a wide range of warm-blooded animals, including humans. In humans, infection with *M. bovis* causes a disease very similar to infections with *M. tuberculosis*, which is the primary agent of tuberculosis in humans. Furthermore, the recently defined *M. caprae* also causes tuberculosis among animals, and to a limited extent in humans.

The main transmission routes of *M. bovis* to humans are through contaminated food (especially raw milk and raw milk products) or through direct contact with animals. A number of wild life animal species, such as deer, wild boar, badgers and the European bison, might contribute to the spread and/or maintenance of *M. bovis* infection in cattle

This chapter focuses on zoonotic tuberculosis caused by *M. bovis*.

Table TB1. | ***Overview of countries reporting data for* Mycobacterium bovis *for 2006-2007***

Data	Total number of MSs reporting	Countries
Human[1]	20	**MSs:** AT, BE, CY, CZ, DK, EE, FI, DE, HU, IE, IT, LV, LU, MT, NL, PT, SK, SL, SE and UK **Non-MSs:** BG, IS, NO, RO
Animal	27	**MSs:** All MSs **Non-MSs:** NO, CH

Note: In the following chapter, only countries reporting 25 samples or more have been included for analyses

1. Includes 2006 data for *M. bovis* in humans as the 2007 data was not available from EuroTB network nor TESSy at the time of production of this report

3.4.1 | *M. bovis* in humans

Mycobacterium bovis cases in 2007 were not reported to the EuroTB network by July 2008, thus the figures set out below are the EuroTB figures from 2006.

The total number of human cases reported in 2006 was similar to that reported in 2005 (Table TB2). The highest proportions of reported and confirmed cases occurred in Germany and the United Kingdom (67.5%), with the greatest disease burden and risk assumed by those aged 65 and over (Figure TB1).

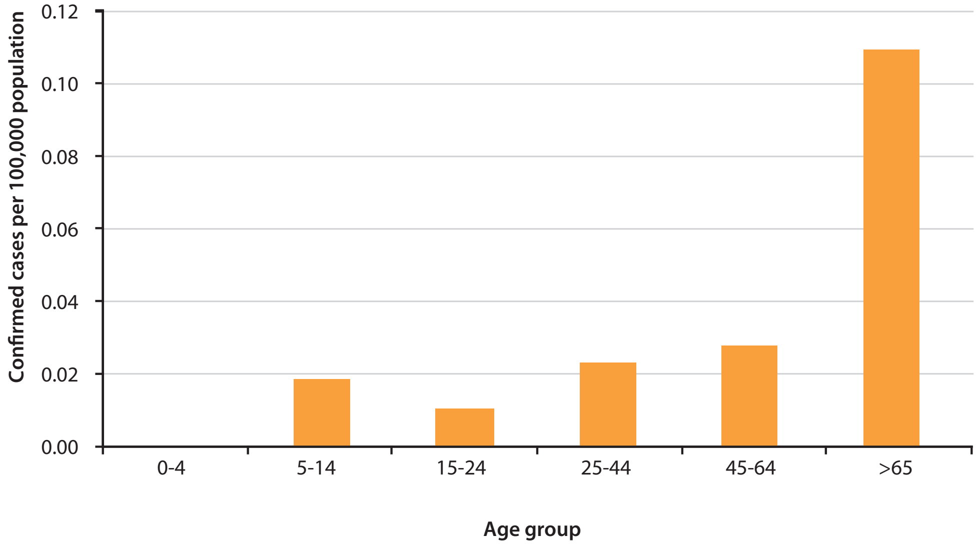
Wide variability in reporting exists between reporting countries, thereby limiting meaningful data interpretation.

Table TB2. | ***Reported tuberculosis* M. bovis *cases in humans and notification rates*[1] *for confirmed cases, 2006 (EuroTB), and reported cases in 2002-2005 (zoonoses report and EuroTB). OTF*[2] *status is indicated***

Country	2006				2005	2004	2003	2002
	Report type[3]	Total cases	Confirmed cases	Confirmed cases/100,000	EuroTB	Total cases in zoonoses report (reported to EuroTB)		
Austria (OTF)	C	4	4	<0.1	6	4	4 (4)	4 (4)
Belgium (OTF)	C	2	2	<0.1	3	5 (3)	5 (1)	2 (4)
Cyprus	U	0	0	0	0	1 (1)	-	-
Czech Republic (OTF)	U	0	0	0	2	- (2)	- (1)	- (3)
Denmark (OTF)	C	3	3	0.1	0	2 (2)	1	2 (2)
Estonia	U	0	0	0	0	0	-	-
France (OTF)	-	-	-	-	-	-	-	-
Finland (OTF)	U	0	0	0	0	0	0	0
Germany (OTF)	C	50	50	0.1	53	51 (54)	- (43)	-
Greece	-	-	-	-	-	0	0	0
Hungary	U	0	0	0	-	0	-	-
Ireland[6]	C	5	5	<0.1	4	5	4	5
Italy[4]	C	9	9	<0.1	7	5 (6)	1 (4)	4 (3)
Latvia	U	0	0	0	0	0	-	-
Lithuania	-	-	-	-	-	0	0	-
Luxembourg (OTF)	C	1	1	0.2	0	-	-	-
Malta	U	0	0	0	1	-	-	-
Netherlands (OTF)	C	13	13	0.1	-	- (13)	- (11)	8 (8)
Poland	-	-	-	-	-	-	-	-
Portugal[6]	C	0	0	0	0	0	0	0
Slovakia (OTF)	U	0	0	0	0	0	0	0
Slovenia	U	0	0	0	-	0 (1)	0	0
Spain	-	-	-	-	4	4	6	2
Sweden (OTF)	C	2	2	<0.1	4	4 (4)	5 (5)	7 (8)
United Kingdom	C	31	31	<0.1	39	21	21	22
EU Total		**120**	**120**	**<0.1**	**123**	**102 (90)**	**47 (69)**	**56 (32)**
Bulgaria[5]	-	-	-	-				
Iceland	C	1	1	0.3	0	-	-	-
Norway (OTF)	U	0	0	0	2	0 (0)	0 (0)	1 (1)
Romania[5]	C	0	0	0				

1. EU total is based on population in reporting countries
2. OTF: Officially bovine tuberculosis free
3. C: case based report, U: unspecified, -: no report
4. In Italy, 15 provinces and 3 regions are OTF
5. In 2006 not yet an EU MS
6. EuroTB data updated

Figure TB1. *Age-specific notification rates of confirmed tuberculosis* **M. bovis** *cases in humans, 2006*[1]



Source: Austria, Belgium, Denmark, Germany, Ireland, Italy, Luxembourg, the Netherlands, Sweden and the United Kingdom (N=93)
1. EuroTB data updated by MS (2008)

3.4.2 Tuberculosis due to *M. bovis* in cattle

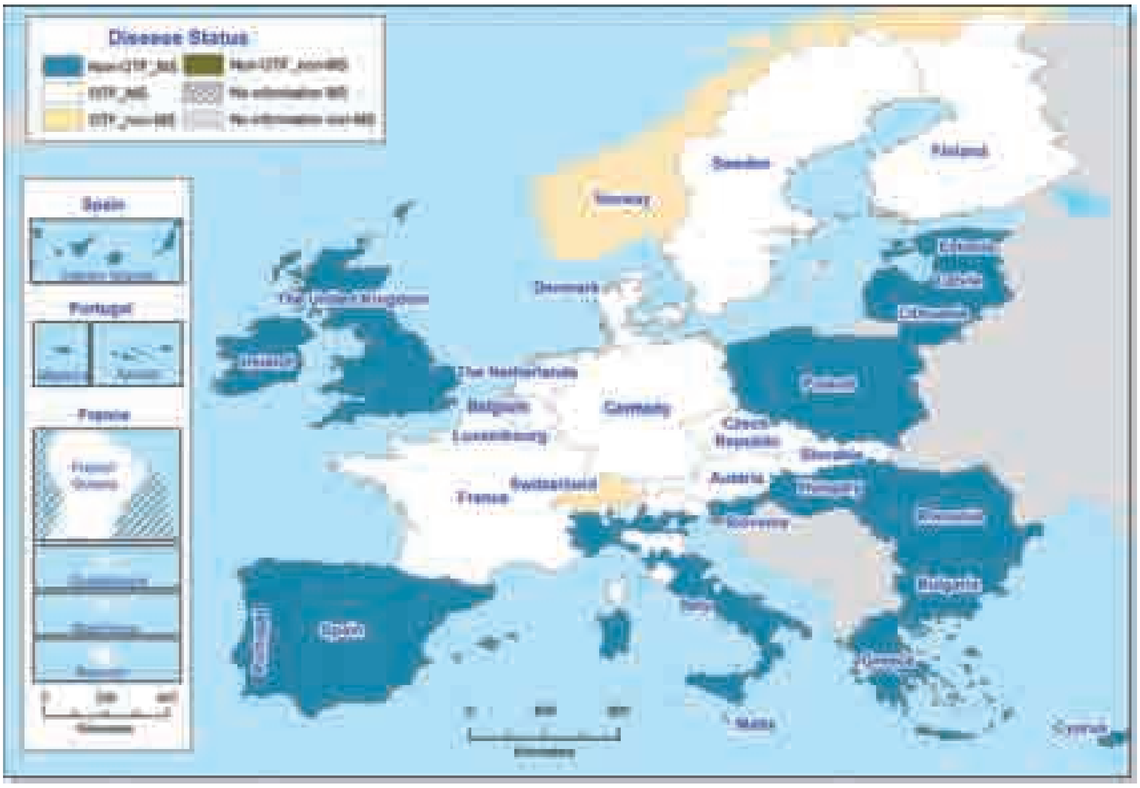
The status regarding freedom of bovine tuberculosis and occurrence of the disease in MSs and Norway in 2007 are presented in Figures TB2 and TB3. As in 2006, Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Luxembourg, the Netherlands, Slovakia, Sweden, Norway and Switzerland were officially bovine tuberculosis-free (OTF) in accordance with Community legislation. In 2007, Italy had additional seven provinces (Novara, Verbania, Livorno, Lucca, Siena, Belluno and Padova) and the region of Emilia-Romagna declared to be OTF (Decision 2007/174/EC) and has now 15 OTF provinces and three OTF regions. The year 2007 was the first reporting year for Romania and Bulgaria as MSs. Romania accounts for 35% of the existing herds in the Community and therefore has a strong impact on the proportion of positive herds when compared to previous years.

Vaccination of cattle against bovine tuberculosis is prohibited in all MSs and reporting non-MSs.

Herds tested positive for bovine tuberculosis in 2007 were geographically clustered; prevalence was highest in the United Kingdom and Ireland, and at lower levels in Spain, Italy and Greece (Figure TB3).

All reported data are presented in Level 3.

Figure TB2. | ***Status of bovine tuberculosis, 2007***



Trend indicators for tuberculosis

To assess annual Community trends in bovine tuberculosis and to complement MS specific figures, two epidemiological trend indicators have been used since 2005.

*The first indicator "**% existing herds infected/positive**" is the proportion of "the number of infected herds" or "the number of positive herds" divided by "the number of existing herds in the country". This indicator describes the situation in the whole country during the reporting year.*

*A second indicator "**% tested herds positive**" is the proportion of "the number of test positive herds" divided by "the number of tested herds". This indicator gives a more precise picture of the testing results and also estimates herd prevalence period during the whole reporting year. This information is only available from countries with Community co-financed eradication programmes.*

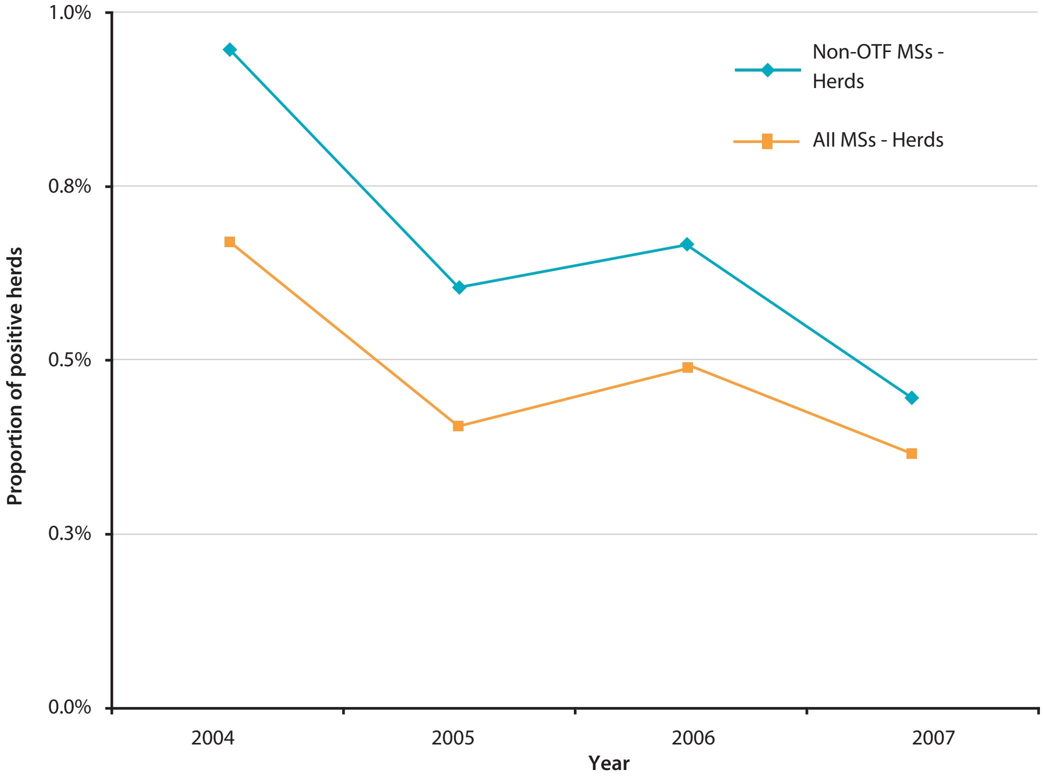
***Infected herds** means all herds under control, which are not officially free at the end of the reporting period. This figure summarises the results of different activities (tuberculin testing, meat inspection, follow-up investigations and tracing). Infected herds are reported from countries and regions that do not receive Community co-financing for eradication programmes.*

***Positive herds** are herds with at least one positive animal during the reporting year, independent of the number of times the herds have been checked (by tuberculin tests). Positive herds are reported from countries and regions that receive Community co-financing for eradication programmes.*

Figure TB3. | ***Proportion of* M. bovis *infected/positive cattle herds, country based data, 2007***

During the past four years, the proportion of tuberculosis positive existing cattle herds in the EU has been decreasing. Compared to 2006, the overall EU-proportion of existing positive herds has decreased from 0.48% to 0.36% in 2007 for all MSs and from 0.66% to 0.44% among the non-OTF MSs (Figure TB4). However, this observed overall decrease in the EU is mainly a result of the inclusion of data from Romania. As Romania joined the EU in 2007 and has more than 1.2 million cattle herds (35% of all herds in the EU), of which relatively few are infected, the EU proportion is reduced markedly due to the inclusion of this data. If the Romanian data is excluded from the 2007 dataset, the EU proportion of existing positive herds for all MSs actually increases to 0.53% compared to 2006.

Figure TB4. | ***Proportion of existing cattle herds positive for* M. bovis*, 2004-2007***



Source: Includes all reporting countries that are MSs in the current year

Officially Tuberculosis Free (OTF) MSs and non-MSs

With the exception of Belgium, France and Germany, bovine tuberculosis was not detected in cattle herds in the 11 OTF MSs and Norway, during 2007 (Table TB3). In total, 131 herds were reported tuberculin test positive in Belgium, France and Germany. These findings are comparable to those of 2006, where infected cattle herds were also reported in these three MSs. In 2006, Belgium reported eight infected herds, France 104 and Germany five. Such low numbers of positive findings do not yet jeopardise the officially free status of these MSs. In France, a slight steady increase was observed in the number of infected herds for the years 2004 to 2007.

Table TB3. | ***Tuberculosis due to* M. bovis *in cattle herds in OTF MSs and OTF non-MSs, 2004-2007***

Officially free MSs	2007			2007	2006	2005	2004
	No. of existing herds	No. of officially free herds	No. of infected herds	% Existing herds infected			
Austria	81,407	81,407	0	0	0	0	0
Belgium[1]	38,690	38,685	5	0.01	0.02	0.01	0.01
Czech Republic	21,676	21,676	0	0	0	0	0
Denmark	24,883	24,883	0	0	0	0	0
Finland	18,624	18,624	0	0	0	0	0
France[1]	246,019	245,907	112	0.05	0.04	0.03	0.02
Germany	165,500	165,488	12	0.01	<0.01	<0.01	-
Luxembourg	1,520	1,520	0	0	0	0	0
Netherlands	48,256	48,254	2	<0.01	0	0	0
Slovakia	10,950	10,950	0	0	0	0	0
Sweden	25,054	25,054	0	0	0	0	0
Total (11 MSs)	**682,579**	**682,448**	**131**	**0.02**	**0.02**	**0.01**	**0.01**
Norway	19,300	19,300	0	0	0	0	0

1. Herds tested bacteriological positive during 2004-2007

Non-OTF MSs

All reporting non-OTF MSs have national eradication programmes for bovine tuberculosis. Table TB4 shows the results from MSs that did not receive Community co-financing for their eradication programmes in 2007, while Table TB5 shows results from those MSs with eradication programmes co-financed by the Community. In 2007, four MSs (Italy, Poland, Portugal, and Spain) received co-financing (Decision 2006/687/EC as amended by Decision 2007/851/EC).

In total, the 15 non-OTF MSs reported 2,886,026 existing bovine herds and 0.44% of them were found infected or positive in 2007 compared to 0.66% in 2006 (including OTF regions and provinces in Italy). However, it was the inclusion of the Romanian data that reduced the overall proportion of infected herds compared to previous years. Romania now constitutes 35% of all cattle herds in the EU, and therefore the proportion of existing positive herds in 2007 is not comparable with the years 2004 to 2006 (Table TB4). When excluding the 2007 data from Romania and Lithuania (where there was no data for 2007), the overall proportion of existing positive herds among other non-OTF MSs remained at the same level as in 2006 (0.75% vs. 0.72%, respectively).

Table TB4. | ***Tuberculosis due to* M. bovis *in cattle herds in non-co-financed non-OTF MSs, 2004-2007***

Officially free MSs	2007			2007	2006	2005	2004
	No. of existing herds	No. of officially free herds	No. of infected herds	% Existing herds infected			
Bulgaria	-	-	0	0	-	-	-
Cyprus	353	143	0	0	0	-	0
Estonia	7,224	0	0	0	0	0	0
Greece	27,447	19,046	117	0.43	0.44	-	-
Hungary	21,139	21,121	6	0.03	0.03	-	<0.01
Ireland	120,652	116,282	5,278	4.37	3.04	3.07	3.10
Latvia	48,984	0	0	0	0	0	0
Lithuania	-	-	-	-	0	0	0
Malta	421	421	0	0	-	0	0
Romania[1]	1,248,595	1,232,099	420	0.03	-	-	-
Slovenia	40,070	40,070	0	0	0	<0.01	0
UK - Great Britain[2]	86,281	78,501	2,974	3.45	3.61	3.52	1.60
UK - Northern Ireland[2]	25,187	22,649	672	2.67	5.46	2.14	-
Total (12 MSs)	**1,626,353**	**1,530,332**	**9,467**	**0.58**	**1.56**	**1.38**	**0.94**

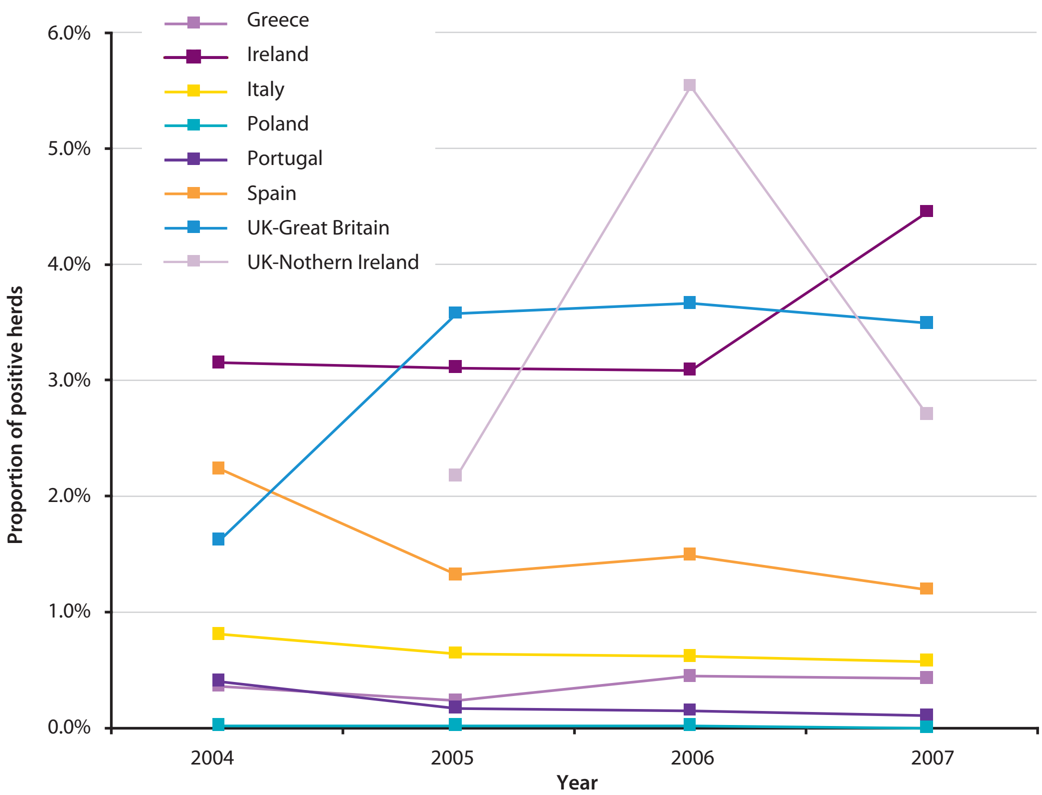
Note that the % of existing herds infected in 2004-06 is not comparable with 2007, as data from Romania is not included for those years. Romania represents 77% of existing herds in 2007

1. In 2006, Romania was not yet an EU MS, but reported 137 infected herds (0.01%)
2. For UK in 2007, the overall % of existing positive herds was 3.27% (3,646 herds out of 111,468 herds)

Six non-OTF MSs: Bulgaria, Cyprus, Estonia, Latvia, Malta and Slovenia, reported no test positive herds during 2007 (Table TB4). Of these MSs, Slovenia has applied for OTF status, and Latvia and Poland are currently preparing the application for OTF status.

Compared to 2006, all non-co-financed non-OTF MSs except Ireland reported approximately the same level or a decrease in the proportion of infected herds (Table TB4 and Figure TB5). Ireland reported an increase of 42% in their number of infected herds. Ireland and the United Kingdom clearly reported the highest proportions of existing herds infected with bovine tuberculosis (4.37% and 3.27%, respectively) among the non-OTF MSs in 2007. In the United Kingdom, the proportion of existing infected herds decreased in Northern Ireland when compared to 2006, while in Great Britain the proportion stayed approximately at the same level as in 2006.

Figure TB5. | ***Proportion of existing cattle herds infected/positive for* M. bovis *in selected non-OTF MSs, 2004-2007***



Among the four non-OTF MSs that were Community co-financed in 2007 (Table TB5), the overall proportion of existing bovine tuberculosis positive herds remained approximately at the same level as in 2006 (0.25% and 0.27%, respectively). Spain reported the highest percentage of positive existing herds and positive tested herds (1.17% and 1.63%, respectively) among the co-financed MSs, but it should be noted that the diagnostic sensitivity of the Spanish eradication programme is very high and has improved since 2006. Thus, for Spain, the reported proportion of positive herds is not directly comparable with the other reporting MSs. Compared to 2006, a decrease in both indicators was observed in Spain, following the moderate increase of the disease observed from 2005 to 2006 (Figure TB5).

The levels of positive herds remained at very low levels during the last three years in Poland and Portugal. In Italy, both indicators also remained stable, but at a slightly higher level. In Italy, the proportion of herds tested positive only include non-OTF regions, and as several provinces in Italy have become OTF from 2004 to 2007, this indicator is not comparable between years for Italy. In this case the indicators are likely to give a more pessimistic picture as the regions with low prevalence are progressively no longer in the programme (Table TB5).

An overview of the *M. bovis* status of cattle herds in co-financed non-OTF MSs, at the end of 2007, is given in Level 3.

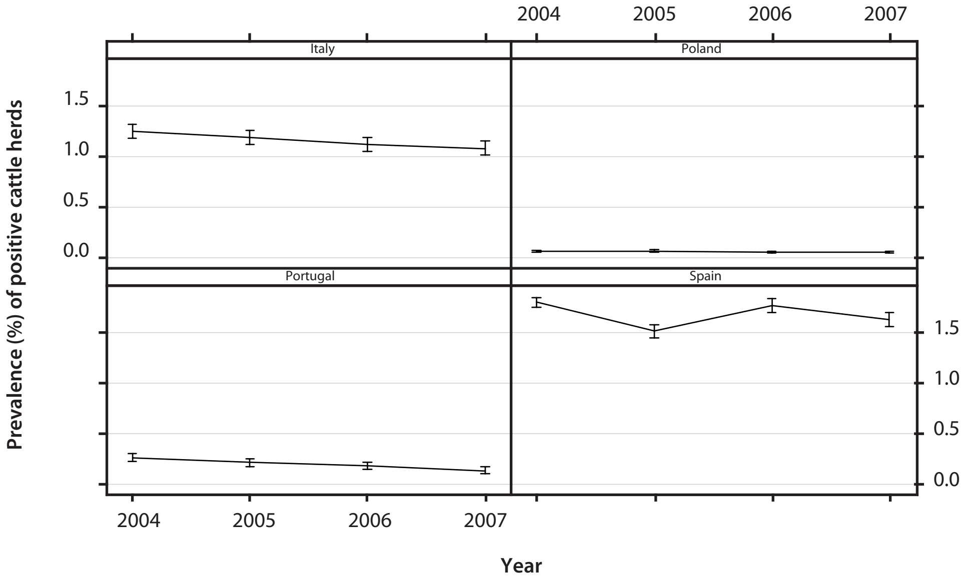
The percentage of OTF herds among the existing herds in the co-financed MSs varies from 32% OTF herds in Poland to 99% in Portugal. In Italy the percentage of OTF herds increased during 2007 whereas in Poland and Spain a decrease was observed and Portugal remained stable. However, the overall percentage of OTF herds in the four co-financed MSs has decreased from 49% in 2006 to 45% in 2007.

Table TB5. | ***Tuberculosis due to* M. bovis *in cattle herds in the co-financed non-OTF MSs, 2004-2007***

Non-OTF MSs	2007					2006		2005		2004	
	No. of existing herds	No. of tested herds[1]	No. of positive herds[1]	% existing herds positive	% tested herds positive	% existing herds positive	% tested herds positive	% existing herds positive	% tested herds positive	% existing herds positive	% tested herds positive
Cyprus	-	-	-	-	-	-	-	0	0	0	0
Estonia	-	-	-	-	-	0	0	-	-	-	-
Greece	-	-	-	-	-	-	-	0.24	0.97	0.36	1.21
Ireland	-	-	-	-	-	-	-	-	-	3.10	3.20
Italy[2]	156,759	84,132	898	0.57	1.07	0.58	1.11	0.59	1.17	0.81	0.79
Lithuania	-	-	-	-	-	-	-	-	-	-	-
Poland	852,882	227,114	86	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Portugal	68,126	51,081	71	0.10	0.14	0.14	0.18	0.16	0.22	0.39	0.27
Slovenia	-	-	-	-	-	-	-	-	-	0	0
Spain	181,906	130,063	2,121	1.17	1.63	1.46	1.76	1.30	1.52	2.20	1.80
UK-Northern Ireland	-	-	-	-	-	-	-	-	-	0.06	0.82
Total (11 MSs)	**1,259,673**	**492,390**	**3,176**	**0.25**	**0.65**	**0.27**	**0.66**	**0.26**	**0.67**	**0.70**	**0.93**

1. Include only tested and positive herds from regions that have co-financed eradication programmes
2. In Italy 15 provinces and three regions are officially tuberculosis free and are excluded. In the provinces that are OTF or do not have a co-financed eradication programme, a total of 11 herds of 30,584 existing herds were found to be infected. In 2005 and 2006, the existing herds do not include existing herds in OTF regions in MS data table, and has been replaced by data from the population table

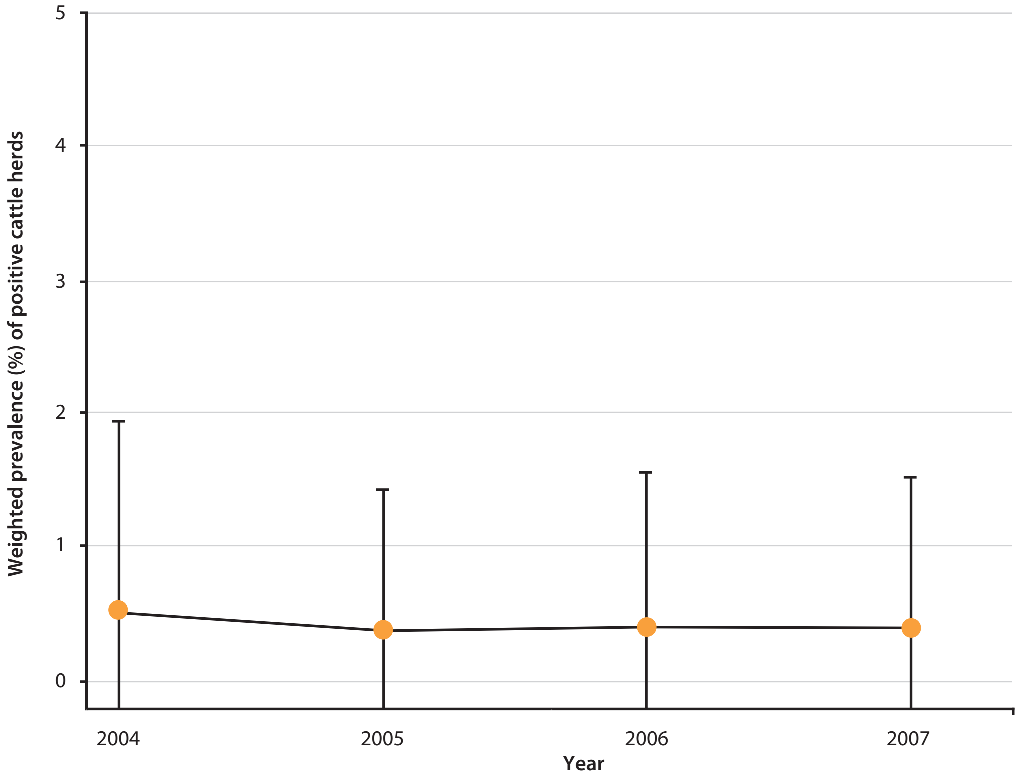
Figure TB6a. | ***Prevalence and 95% CI of cattle herds that tested positive for* M. bovis *in co-financed non-OTF MSs, 2004-2007***



Note: Vertical bars indicate exact binomial 95% confidence intervals

The MS specific trends in bovine tuberculosis positive tested herds in the co-financed non-OTF MSs from 2004 to 2007 are shown in Figure TB6a. The prevalence of herds that tested positive for bovine tuberculosis appears to decrease slightly in the four MSs. Moreover, a logistic regression analysis showed that there was a statistically significant overall decreasing trend in the group of these four co-financed non-OTF MSs during these years (Figure TB6b). See Appendix 1 and the notes for Figure TB6 for statistical descriptions.

Figure TB6b. | ***Weighted[1] mean prevalence and 95% CI of cattle herds that tested positive for* M. bovis *in co-financed non-OTF MSs, 2004-2007[2]***



1. Weight is the reciprocal of the ratio between the number of tested herds and the number of existing herds per MS per year
2. Include data from: IT, PL, PT and ES

3.4.3 | Tuberculosis due to *M. bovis* in animal species other than cattle

Surveillance of tuberculosis in domestic animals other than cattle, e.g. sheep, goats, pigs and farmed deer is performed mostly by post-mortem meat inspection. In addition, results from other bacteriological investigations are reported inconsistently. Findings of *M. bovis* in all animal species are notifiable in Finland, Ireland, Sweden and Norway. Most of the investigated animals tested for *M. bovis* were not positive, and Table TB6 summarises the test positive investigations of *M. bovis* in other animals in 2007 for MSs reporting for 25 sampled animals or more (positive tests were also found in MSs with less than 25 samples animals, see text below).

In 2007, *M. bovis* was detected in sheep in Ireland and the United Kingdom and in goats in France, Portugal and the United Kingdom. Also during 2001 to 2006, *M. bovis* in sheep or goats was reported in several MSs (Spain, France, Ireland, Italy, Portugal and the United Kingdom). Overall less than 0.01% of these animals tested positive in 2007.

M. bovis in pigs is notifiable in Denmark, Finland, France, Sweden and Norway. In 2007, *M. bovis* was detected in a few pigs in France, Hungary, Spain and the United Kingdom, similar to the findings in 2006. *M. bovis* was not reported from farmed wild boar in 2007. Austria and Denmark reported no positive findings from their national meat inspections of all slaughtered pigs. Two MSs reported a few positive *M. bovis* findings in slaughter pigs (Italy reported nine and the Czech Republic reported 145 positive carcasses in 2007).

Surveillance of tuberculosis in farmed deer is also performed mostly by *post mortem* meat inspection, but some MSs apply in addition intradermal tuberculin tests in herds. *M. bovis* is notifiable in farmed deer in Denmark, Finland, France, Ireland, Sweden, the United Kingdom, and Norway. In Sweden a compulsory national eradication programme is in place. As in previous years, no positive herds of farmed deer were reported for 2007; however the United Kingdom reported a few infected animals.

With the exception of Finland, Sweden and Norway, tuberculosis in wildlife is not notifiable in MSs. France, Spain and Italy monitor for Mycobacteria in wildlife populations (primarily wild boar and deer). In wildlife populations, *M. bovis* was reported in deer (France, Hungary, Ireland, Portugal and the United Kingdom), badgers (Ireland and the United Kingdom) and in wild boar (France, Hungary, Italy and Portugal) in 2007. In the United Kingdom (England and Wales) badgers are reported to be an important wildlife reservoir for bovine tuberculosis.

In 2007, *M. bovis* was diagnosed in a few zoo animals in the United Kingdom and Hungary, and cats were found infected in the United Kingdom.

All reported data from farmed deer and other animals are presented in Level 3.

Table TB6. | ***Reports on positive findings of* M. bovis *in other animal species, 2007***

Country	Sampling unit	Tested	Positive[1]
Pigs			
France[2]	Animal	27	2
Spain[2]	Animal	218	28
United Kingdom[2]	Animal	69	7
Sheep			
Ireland[2]	Animal	50	12
Lamas			
United Kingdom[2]	Animal	53	15
Cats and dogs			
United Kingdom [2,3]	Animal	29	1
United Kingdom[2,4]	Animal	103	15
Farmed deer			
United Kingdom[2]	Animal	112	9
Deer (wild)			
France[5]	Animal	140	15
Ireland[2]	Animal	192	38
Portugal	Animal	73	37
Spain	Animal	670	45
United Kingdom[2]	Animal	53	24
Wild boars			
France[5]	Animal	201	65
Italy[5]	Animal	3,166	217
Portugal	Animal	28	9
Spain	Animal	836	141
Badgers			
Ireland[2]	Animal	898	242
United Kingdom[6]	Animal	72	12

1. Bacteriological positive units
2. Tissue specimens from suspected animals
3. Dogs
4. Cats
5. Monitoring programme
6. Survey of dead badgers in Northern Ireland

3.4.4 | Discussion

Human infections of *M. bovis* were reported for 2006, and as in previous years, human cases were rare in the EU. However, several countries declared as OTF of bovine tuberculosis still reported human cases. This could be due to several reasons such as the disease being detected in elderly people that were infected before the country was declared free of bovine tuberculosis in animals or due to immigrants from countries that are not OTF.

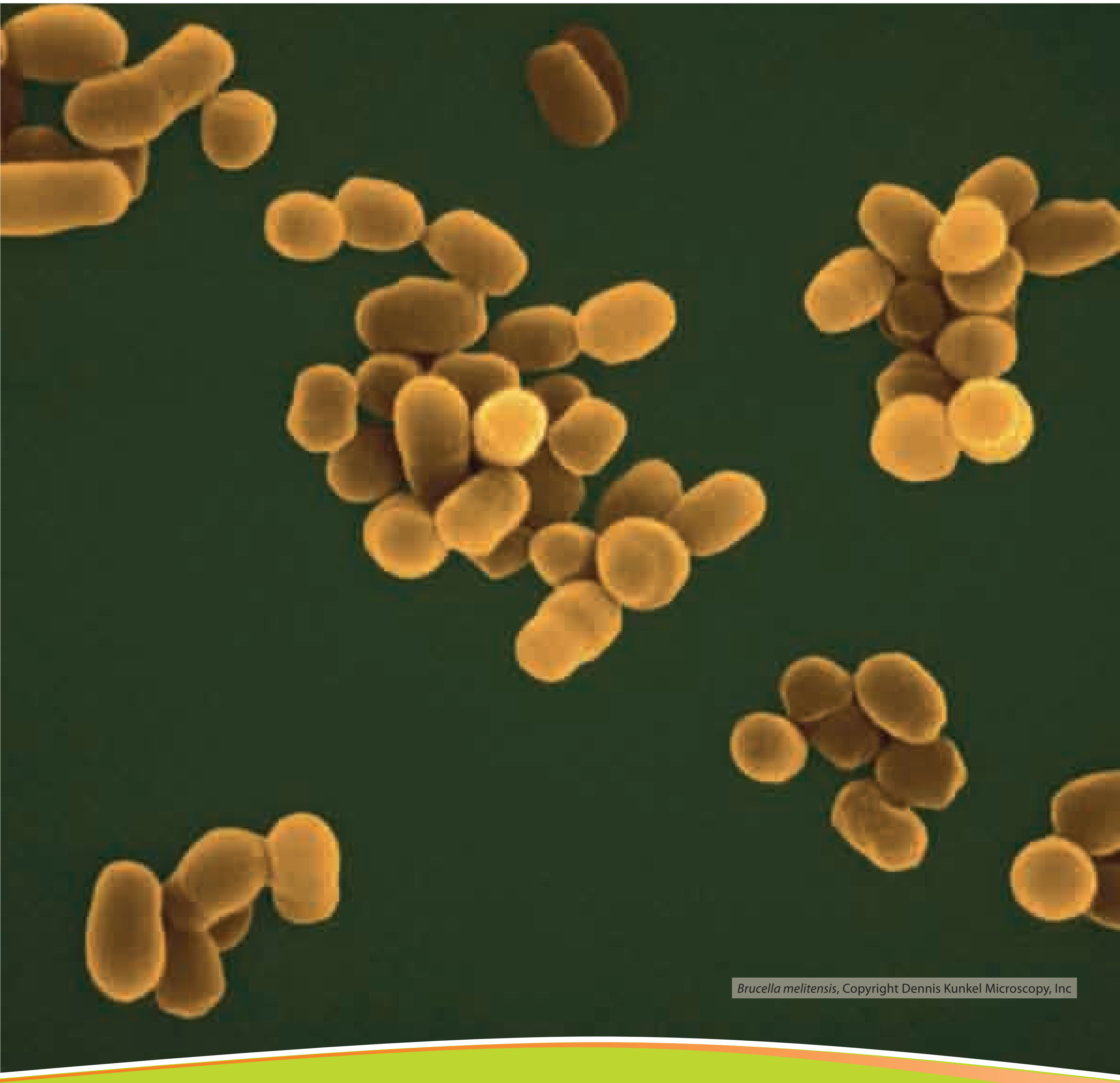
Eleven MSs are officially free of bovine tuberculosis and, as in previous years, three of these reported infected herds. Some of the non-OTF MSs, which recently joined the EU, are in the process of applying for this status.

In non-OTF MSs the proportion of infected cattle herds remained at the same level. The reported decrease in the proportion of infected cattle herds was due to the inclusion of data from Romania that has a large cattle population with few positive herds.

In the 15 reporting non-OTF MSs no single bovine tuberculosis infected herd was reported in 2007 by Bulgaria, Cyprus, Estonia, Latvia, Malta, and Slovenia. Of the nine reporting non-OTF MSs, which all detected bovine tuberculosis positive herds, Ireland and the United Kingdom accounted for the highest prevalence in their national herds. The remaining non-OTF MSs reported a low to very low proportion of positive cattle herds.

Compared to 2006, prevalence either decreased or remained at a comparable level in most of the non-OTF MSs. Only in Ireland did the proportion of existing positive herds increase. A significant slightly decreasing trend in the prevalence of bovine tuberculosis positive cattle herds in the Community co-financed MSs was observed in the years 2004 to 2007. Thus, the overall situation in the EU seems to be slowly improving or remains largely unchanged.

Findings of *M. bovis* in other domestic animals, wildlife and zoo animals were reported by several MSs, but in most cases only few animals were reported positive. This indicates that some of these animal species can act as a reservoir of bovine tuberculosis, especially badgers, and are reported to be an important source of infection by some MSs. However, as *M. bovis* is not notifiable in all species in all MSs these figures do not reflect the true occurrence of the disease.



Brucella melitensis, Copyright Dennis Kunkel Microscopy, Inc

Brucella | 3.5.

Brucellosis is an infectious disease caused by some bacterial species of the genus *Brucella*. There are six species known to cause human disease and each of these has a specific animal reservoir: *B. melitensis* in goats and sheep, *B. abortus* in cattle, *B. suis* in pigs, *B. canis* in dogs and *B. ceti* and *B. pinnipedialis* in marine animals. Transmission occurs through contact with animals, animal tissue contaminated with the organisms, or through ingestion of contaminated products.

In humans, brucellosis is characterised by flu-like symptoms such as fever, headache and weakness of variable duration. However, severe infections of the central nervous systems or endocarditis may occur. Brucellosis can also cause long-lasting or chronic symptoms that include recurrent fever, joint pain, arthritis and fatigue. Of the six species known to cause disease in humans, *B. melitensis* is the most virulent and causes the most severe illness in the EU. Humans are usually infected from direct contact with infected animals or via contaminated food, typically raw milk.

In animals, the organisms are localised in the reproductive organs causing sterility and abortions, and are shed in large numbers in urine, milk and placental fluid.

Table BR1 presents the countries reporting data for 2007.

Table BR1. | ***Overview of countries reporting* Brucella *data, 2007***

Data	Total number of MSs reporting	Countries
Human	24	**MSs:** All MSs except DK, LV, LU **Non-MSs:** IS, LI, NO
Food	3	**MSs:** BE, IT, PT
Animal	26	**MSs:** All MSs except MT **Non-MSs:** NO, CH

Note: In the food and animal chapters, only countries reporting 25 samples or more have been included for analyses

3.5.1 | Brucellosis in humans

Of the 24 MSs reporting data on human brucellosis, six MSs (Cyprus, the Czech Republic, Estonia, Lithuania, Malta and Slovakia) reported no cases. In total, 731 cases of human brucellosis were reported in the EU in 2007, of which 542 (74.1%) were reported as confirmed cases. MSs with the status as officially free of brucellosis in cattle (OBF) as well as sheep and goats (ObmF) reported low numbers of cases, whereas the non-OBF/non-ObmF MSs: Greece, Italy, Portugal and Spain, accounted for 83.4% of all confirmed cases reported in 2007 (Table BR2).

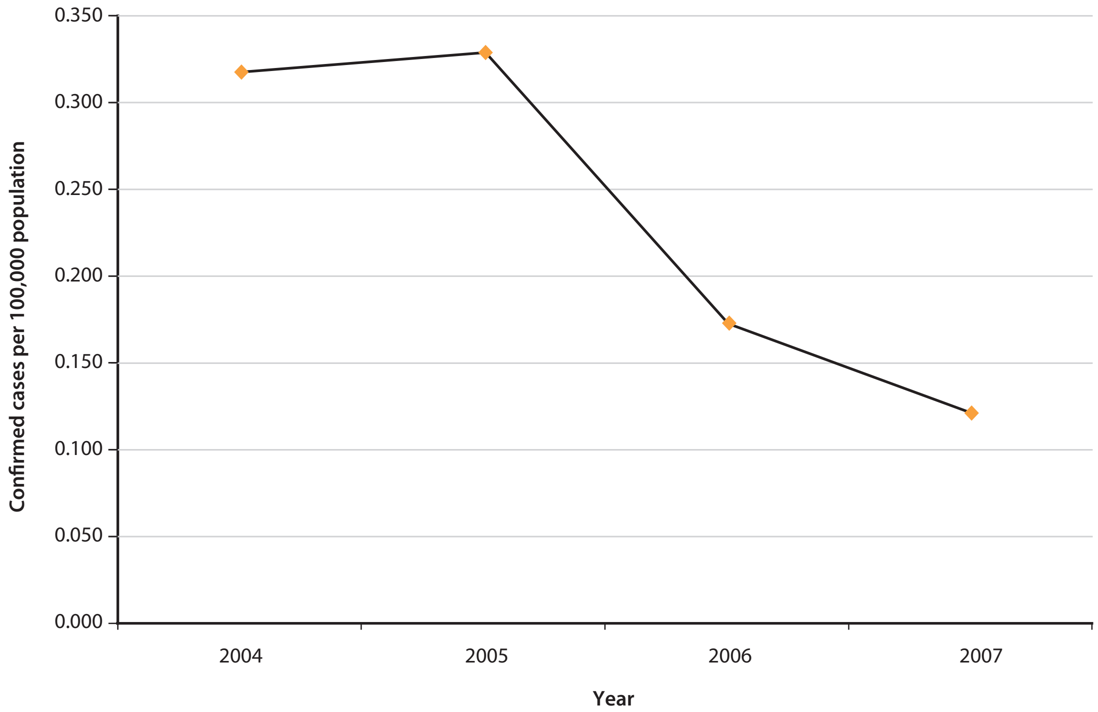
In the EU, the notification rate of brucellosis in 2007 was lower than in 2006 (0.11 vs. 0.17, respectively). The decreasing trend observed since 2004 was not statistically significant though at EU level. (Figure BR1).

Table BR2. | ***Reported brucellosis cases in humans, 2003-2007[1] and notification rates for confirmed cases in 2007, OBF and ObmF status* is indicated***

Country	2007				2006	2005	2004	2003
	Report Type[2]	Cases	Confirmed Cases	Confirmed cases/100,000	Confirmed cases		Cases	
Austria (OBF/ObmF)	A	1	1	<0.1	1	2	2	5
Belgium (OBF/ObmF)	C	3	3	<0.1	2	2	8	0
Bulgaria[3]	A	57	9	0.1	3			
Cyprus	U	0	0	0	0	2	1	5
Czech Republic (OBF/ObmF)	U	0	0	0		1	0	-
Denmark[4] (OBF/ObmF)	–[4]	–	–			-	4	14
Estonia	U	0	0	0	0	0	0	0
Finland (OBF/ObmF)	C	2	2	<0.1	0	1	1	1
France[5] (OBF)	C	14	14	<0.1	24	35	19	21
Germany (OBF/ObmF)	C	21	21	<0.1	37	31	32	27
Greece	C	151	101	0.9	104	337	223	255
Hungary (ObmF)	C	1	1	<0.1		1	0	-
Ireland (ObmF)	C	28	7	0.2	4	7	2	5
Italy[6]	C	76	76	0.1	318	632	398	-
Latvia	–	–	–		0	0	0	-
Lithuania	U	0	0	0	0	0	1	0
Luxembourg (OBF/ObmF)	–	–	–			0	-	-
Malta	U	0	0	0	0	0	-	-
The Netherlands (OBF/ObmF)	C	5	5	<0.1	0	2	8	4
Poland (ObmF)	C	2	1	<0.1	0	3	1	4
Portugal[7]	C	75	74	0.7	76	147	39	139
Romania[3] (ObmF)	C	4	4	<0.1	1			
Slovakia (OBF/ObmF)	C	0	0	0	0	0	0	1
Slovenia (ObmF)	C	1	1	<0.1	0		0	1
Spain[8]	C	269	201	0.5	162	196	589	596
Sweden (OBF/ObmF)	C	8	8	0.1	4	6	3	3
United Kingdom (OBF/ObmF)[9]	C	13	13	<0.1	16	12	31	21
EU Totals		**731**	**542**	**0.1**	**752**	**1,417**	**1,362**	**1,102**
Iceland	U	0	0	0	0	0	-	-
Liechtenstein	U	0	0	0	0			
Norway (OBF/ObmF)	U	0	0	0	3	1	2	3

* OBF/ObmF: Officially Brucellosis-free/Officially *B. melitensis*-free in cattle or sheep/goat population
1. Number of confirmed cases for 2005-2007 and number of total cases for 2003-2004
2. A: aggregated data report; C: case based report; –: no report; U: unspecified
3. EU membership began in 2007
4. No surveillance system exists
5. In France, 64 departments are ObmF
6. In Italy, seven regions and 20 provinces are OBF and eight regions and five provinces are ObmF
7. In Portugal, four islands in the Azores are OBF and all the Azores are ObmF
8. In Spain, two provinces of the Canary Islands are ObmF
9. In the United Kingdom, only Great Britain is OBF

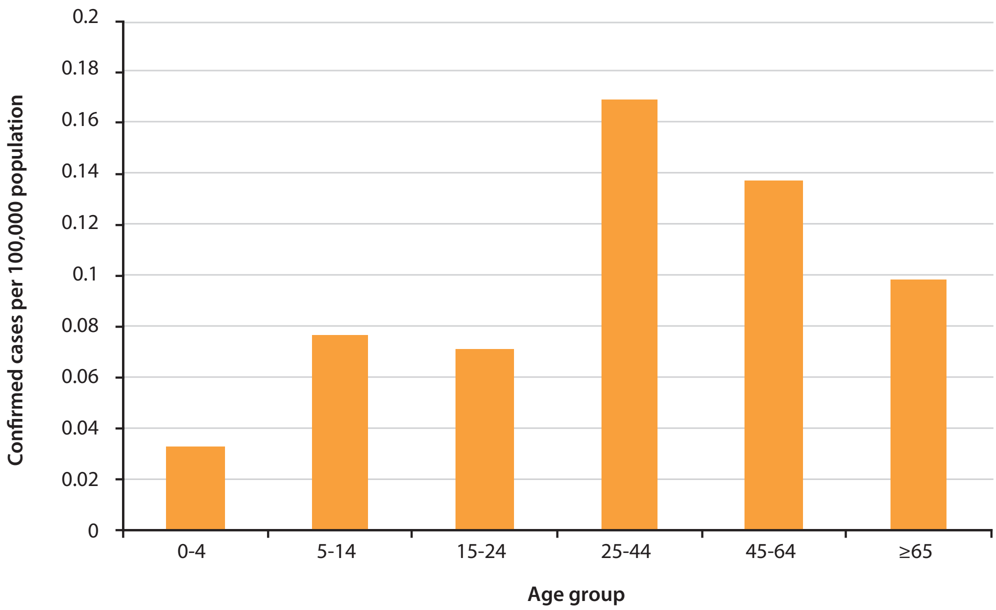
Figure BR1. | ***Notification rate of reported[1] confirmed cases of human brucellosis in the EU[2], 2004-2007***



1. Includes total cases for 2004 and confirmed cases from 2005-2007
2. Includes data from: AT, BE, CY, EE, FI, FR, DE, GR, IE, IT, LT, NL, PL, PT, ES, SE, UK

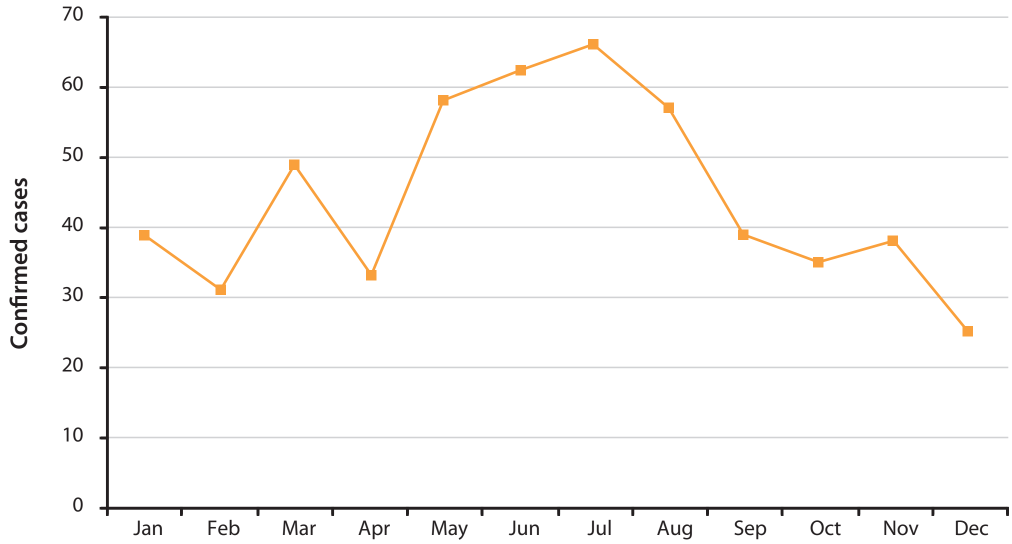
The highest notification rate of human brucellosis was noted in the age group 25-44 followed by the age group 45-64, (36.3% and 31.2% of confirmed cases, respectively) (Figure BR2). Brucellosis exhibited a slight seasonal pattern in 2007 with more cases occurring in the summer (Figure BR3).

Figure BR2. | ***Age-specific notification rate of reported confirmed human cases of brucellosis, TESSy data for reporting MSs[1], 2007***



1. Includes data from all EU MSs, except CY, CZ, DK, EE, LV, LT, LU, MT, SK (N=526)

Figure BR3. | ***Seasonal distribution of reported confirmed human cases of brucellosis in reporting MSs[1], 2007***



1. Includes data from: BE, FI, FR, DE, GR, HU, IE, IT, NL, PL, PT, RO, SI, ES, SE and UK (N = 532)

Nine MSs with confirmed human cases reported whether the cases were imported or domestically acquired. All brucellosis cases in Austria, France, Hungary, Slovenia and Sweden were reported to be imported, whereas in Spain, all cases were reported to be acquired domestically (Table BR3). Also Germany and the Netherlands reported most of their cases as imported. Less than half (42.2%) of the infections at EU level remain of unknown geographical origin.

The suspected vehicle of transmission was reported for 306 of the confirmed cases, however in 251 of these cases the vehicle was reported as unknown. The known vehicles reported were contact with farm animals (31 cases), cheese (21 cases), milk (two cases) and sheep meat (one case). Portugal contributed with the most information.

Table BR3. | ***Reported confirmed brucellosis cases in humans by reporting countries and origin of case (imported/domestic), 2007***

Country	Domestic (%)	Imported (%)	Unknown (%)	Total (n)
Austria	0	100	0	1
Belgium	0	0	100	3
Bulgaria	0	0	100	9
Finland	0	0	100	2
France	0	100	0	14
Germany	14.3	76.2	9.5	21
Hungary	0	100	0	1
Ireland	0	0	100	7
Italy	0	0	100	76
Netherlands	0	80.0	20.0	5
Poland	0	0	100	1
Portugal	0	0	100	74
Romania	0	0	100	4
Slovenia	0	100	0	1
Spain	100	0	0	201
Sweden	0	100	0	8
United Kingdom	0	46.2	53.9	13
EU Total	**46.3**	**11.6**	**42.2**	**441**

Only 12% of *Brucella* isolates in the EU were further speciated. *B. melitensis* represented 8% and *B. abortus* 4% of reported confirmed cases (n= 357).

3.5.2 | *Brucella* in food

Only Belgium and Italy reported investigations including more than 25 samples of milk and cheese for the presence of *Brucella*. The majority of samples were of raw or low heat-treated milk and cheeses. Belgium did not detect any positive samples out of the 70,067 batches of raw cow's milk tested. Italy reported investigations where 20% and 9% of the batches of raw cow's milk and raw sheep's milk were positive, respectively. These findings are relatively high and indicate a human health risk related to the consumption of raw milk products present in the country (Table BR4). Only few positive samples of raw cow's milk have previously been reported by Italy (2001, 2003, 2004 and 2006). *Brucella* was also isolated from (single) raw milk samples from Italian sheep and Italy also reported one sample of cheese made from cow's milk to be positive for *Brucella*.

Overall, since 2001, only Greece, Italy and Portugal have reported findings of *Brucella* in raw cow's milk.

All data on *Brucella* in food are presented in Level 3.

Table BR4. | ***Milk and cheese samples tested for* Brucella*, 2007***

Country	Description	Units	N	Pos	% Pos
Raw milk from cows					
Belgium	Milk for manufacture	Batch	70,067	0	0
Italy		Batch	46	9	19.6
Italy		Single	12,342	41	0.3
Italy	Milk for manufacture	Single	74	0	0
Raw milk from goats/sheep					
Italy	Goats	Batch	30	0	0
Italy	Goats	Single	25	0	0
Italy	Sheep	Batch	504	45	8.9
Italy	Sheep	Single	772	27	3.5
Raw milk from other animals/unspecified					
Italy	Milk for manufacture	Single	344	0	0
Italy		Single	71	0	0
Cheese made from milk from cows					
Italy	Soft and semi-soft	Batch	54	0	0
Italy[1]	Soft and semi-soft	Single	403	0	0
Italy		Single	191	0	0
Cheese made from milk from sheep/other animals/unspecified					
Italy[2]	Goats' milk, soft and semi-soft	Single	43	0	0
Italy	Sheep's milk, soft and semi-soft	Batch	208	0	0
Italy[3]	Sheep's milk, soft and semi-soft	Single	187	0	0
Italy[4]	Unspecified milk	Single	436	0	0
Total (2 MSs)			**85,797**	**122**	**0.1**

Note: Data are only presented for sample size ≥25

1. Includes 73 samples of cheese made from raw or low heat-treated milk
2. Includes 43 samples of cheese made from raw or low heat-treated milk
3. Includes 110 samples of cheese made from raw or low heat-treated milk
4. Includes 323 samples of cheese made from raw or low heat-treated milk

3.5.3 | *Brucella* in animals

Cattle

The status regarding freedom of bovine brucellosis (OBF) and occurrence of the disease in MSs and non-MSs in 2007 are presented in Figures BR4 and BR5. In 2007, some officially free areas were recognised: Slovenia, two Italian provinces (Torino, Firenze) and one Italian region (Veneto).

The herds tested positive for bovine brucellosis were geographically clustered in southern Europe and the island of Ireland. Italy had the highest country prevalence followed by Greece (Figure BR5).

All reported data are presented in Level 3.

Figure BR4. | ***Status of bovine brucellosis, 2007***

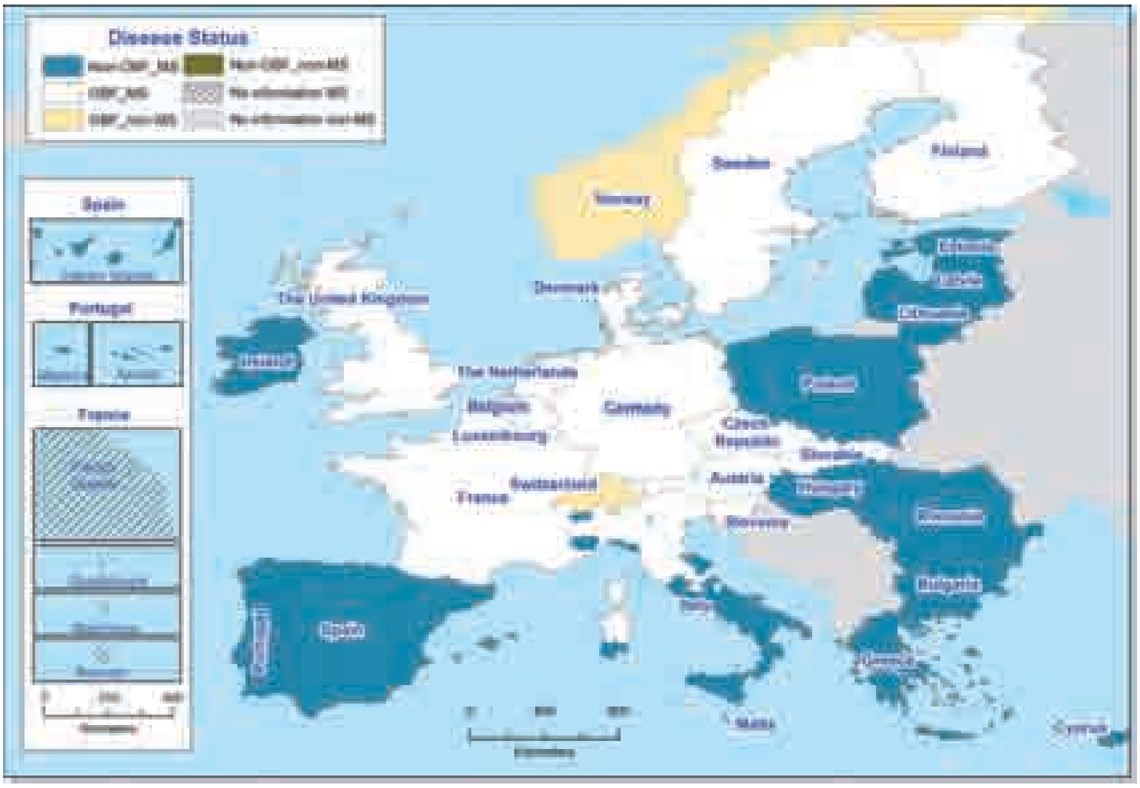


Figure BR5. | ***Proportion of* Brucella *infected/positive cattle herds, country-based data, 2007***

Note: A graduate colour ramp with class interval of 0.1 was used for the map symbology

Trend indicators for brucellosis

To assess the annual Community trends in bovine and ovine/caprine brucellosis and to complement the MS specific figures, two epidemiological trend indicators have been used since 2005.

*The first indicator "**% existing herds infected/positive**" is the proportion of "the number of infected herds" or "the number of herds positive" divided by "the number of existing herds in the country". This indicator describes the situation in the whole country during the reporting year.*

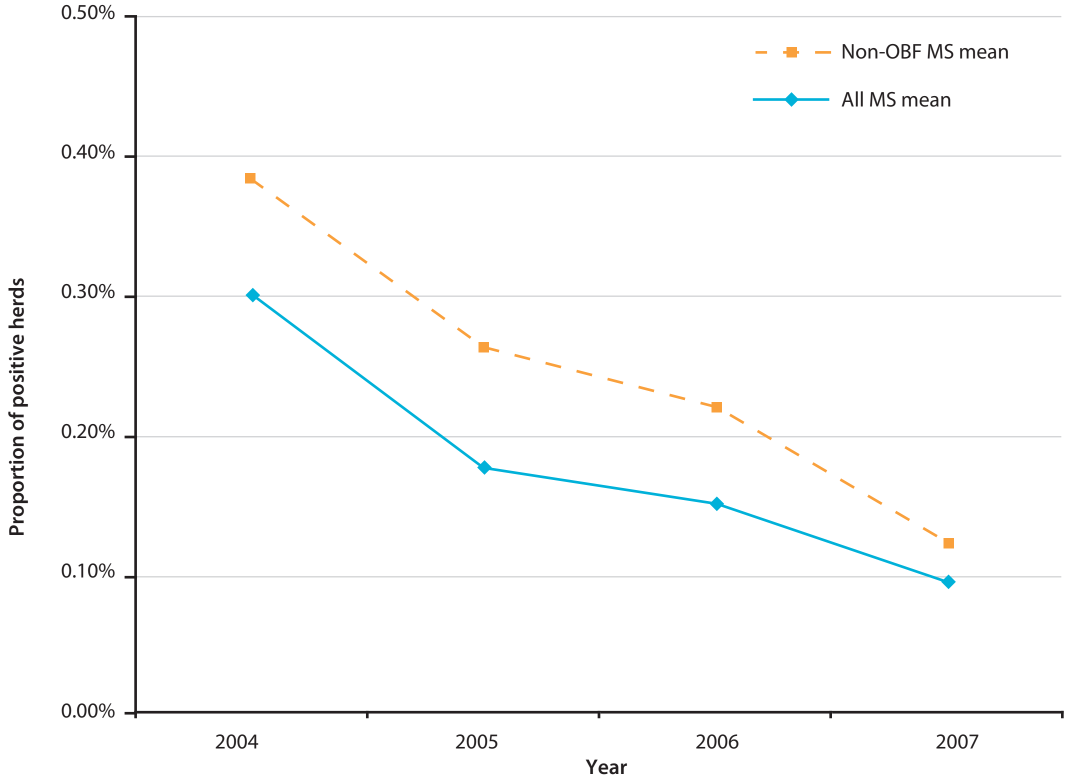
*The second indicator "**% tested herds positive**" is the proportion of "the number of herds test positive" divided by "the number of tested herds". This indicator gives a more precise picture of the testing results and also estimates the period herd prevalence during the whole reporting year. This information is only available from countries with Community co-financed eradication programmes.*

***Infected herds** are all herds under control, which are not free or officially free at the end of the reporting period. This figure summarises the results of different activities (notification of clinical cases, routine testing, meat inspection, follow-up investigations and tracing). Infected herds are reported from countries and regions that do not receive Community co-financing for eradication programmes.*

***Positive herds** are herds with at least one positive animal during the reporting year, independent of the number of times the herds have been checked. Positive herds are reported from countries and regions that receive Community co-financing for eradication programmes.*

The overall EU-proportion of existing cattle herds positive or infected with bovine brucellosis has decreased from 0.30% in 2004 to 0.10% in 2007, and, among the non-OBF MSs, the proportion decreased from 0.22% in 2006 to 0.13% in 2007 (Figure BR6). This observed decrease is mainly due to the inclusion of data from Romania in 2007, who joined the EU this year. Romania has more than 1.2 million cattle herds (35% of all herds in the EU), and no herds were reported infected with bovine brucellosis. The EU proportion is reduced markedly due to the inclusion of these data. If the Romanian data are excluded from the 2007 dataset, no difference in the EU proportion of existing herds positive was observed compared to 2006.

Figure BR6. | ***Proportion of existing cattle herds positive for* Brucella*, 2004-2007*[1]**



1. Missing data from OBF MSs: DE (2004, 2005), LU (2004) and non-OBF MSs: HU (2005), MT (2006), BG (2007), LT (2007). RO included in 2007

Officially Bovine Brucellosis Free (OBF) MSs, non-MSs and regions

In 2007, Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Luxembourg, the Netherlands, Norway, Switzerland, Slovenia, Slovakia, and Sweden were officially free of brucellosis in cattle (OBF) and the infection was not detected in any cattle herd in these 12 OBF MSs and two OBF non-MSs.

In addition, there were several OBF regions in Italy (seven regions and 20 provinces) and in the United Kingdom, Great Britain is OBF. In Portugal, four islands of the Azores are OBF. In 2007, Portugal reported 254 infected herds in the Azores, which represents 1.6% of the existing herds of the Azores. No information was available on whether these herds were from the OBF islands.

Non-OBF MSs and non-MSs

In 2007, the 15 non-OBF MSs reported a total population of 2,726,840 bovine herds, of which 0.13% was found infected or positive for bovine brucellosis. The proportion of infected or positive existing herds decreased compared to 2006 (0.22%).

Five non-OBF MSs: Cyprus, Estonia, Hungary, Latvia and Romania, reported no positive cattle herds out of their total 2,026,650 existing bovine herds in 2007. These MSs joined the Community in 2004 and in 2007 (Romania). Latvia is preparing the application for OBF status.

In 2007, positive herds were detected in Greece, Malta and Poland, which were non-OBF MSs without Community co-financed eradication programmes. The percentages of positive existing herds for these MSs were 1.01%, 0.24% and 0.001%, respectively. No data were received from Bulgaria and Lithuania.

Table BR5. | ***Brucella* in cattle herds in co-financed non-OBF MSs, 2005-2007**

Non-officially free MSs	2007					2006		2005	
	No. of existing herds	No. of tested herds[1]	No. of positive herds[1]	% existing herds positive[1]	% tested herds positive[1]	% existing herds positive[1]	% tested herds positive[1]	% existing herds positive[1]	% tested herds positive[1]
Cyprus	353	289	0	0	0	0.29	0.32	1.41	1.53
Greece	-	-	-	-	-	0.94	2.89	0.85	4.30
Ireland	120,652	116,952	161	0.13	0.14	0.11	0.11	0.12	0.12
Italy[2]	136,049	55,572	1,765	1.30	3.18	0.81	1.93	1.04	2.17
Poland	-	-	-	-	-	<0.01	0.01	<0.01	0.01
Portugal	68,126	54,437	431	0.63	0.79	0.82	1.00	0.64	0.79
Spain	184,624	128,504	728	0.39	0.57	0.71	0.84	1.07	1.26
UK - Northern Ireland	26,915	24,139	157	0.58	0.65	0.43	0.49	0.33	0.37
Total (8 MSs)	**536,719**	**379,893**	**3,242**	**0.60**	**0.85**	**0.25**	**0.55**	**0.31**	**0.70**

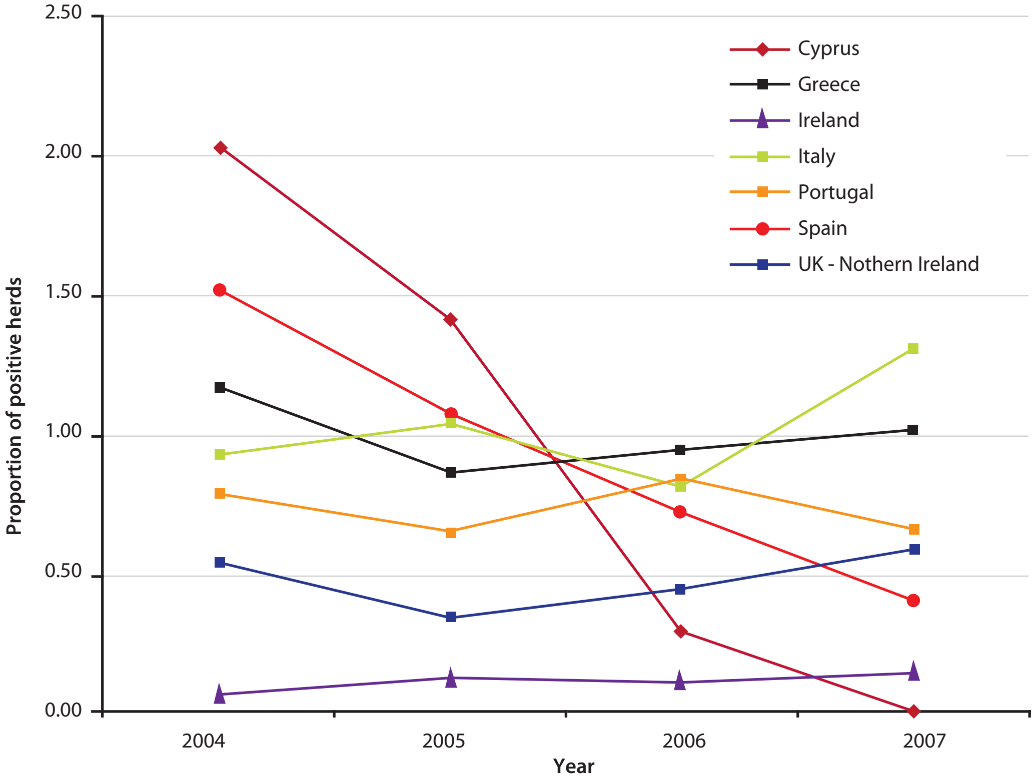
1. Include only tested and positive herds from regions that have co-financed eradication programmes
2. In Italy 20 provinces and seven regions are officially brucellosis free. In the provinces that are OBF or do not have a co-financed eradication programme, none of the 65,599 existing herds were found infected. In 2005 and 2006, existing herds do not include existing herds in OBF regions in MS data table, and has been replaced by data from population table

All six non-OBF MSs with Community co-financed eradication programmes, except Cyprus, reported positive cattle herds in 2007 (Table BR5). Overall, in these MSs, both epidemiological indicators estimating prevalence increased compared to 2006; the percentage of positive tested herds increased from 0.55% to 0.85% and the percentage of existing positive herds from 0.25% to 0.60%. This increase in both indicators was observed in Ireland, Italy and the United Kingdom (Northern Ireland), whereas for Spain, Cyprus and Portugal, both indicators decreased. The highest proportion of positive existing herds was reported by Italy, whereas Spain, Portugal, Ireland and Northern Ireland all reported a very low prevalence.

In most of the co-financed non-OBF MSs, the majority (70%-97%) of the existing cattle herds were under control programmes, except in Italy where only 42% of the herds were reported to be under programme. For further details see Level 3.

When considering data from previous years, Cyprus and Spain have a decreasing trend in proportions of existing positive cattle herds over the past four years (the first epidemiological indicator), whereas Greece, Ireland and the United Kingdom (Northern Ireland) had a slight increase since 2005 (Figure BR7). In Italy a more marked increase was observed. This is primarily due to a 20% reduction in the number of herds tested due to some regions becoming OBF, whereas the number of positive herds remained at the same level in the remaining non-OBF regions.

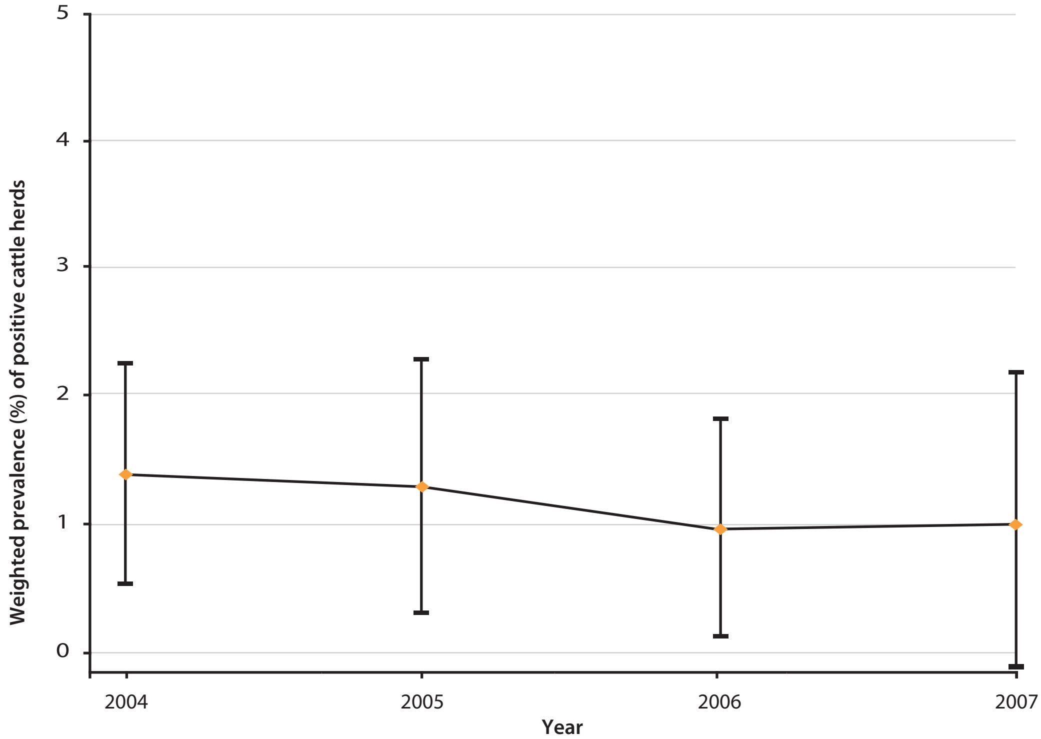
Figure BR7. | ***Proportion of existing cattle herds positive for bovine brucellosis in selected non-OBF MSs, 2004-2007***



At EU level, a logistic regression analysis indicated no significant trend in the overall prevalence of brucellosis positive tested cattle herds from 2004 to 2007 in the seven reporting co-financed MSs (Figure BR8a). See Appendix 1 and notes to Figure BR8a for descriptions of statistical analyses carried out.

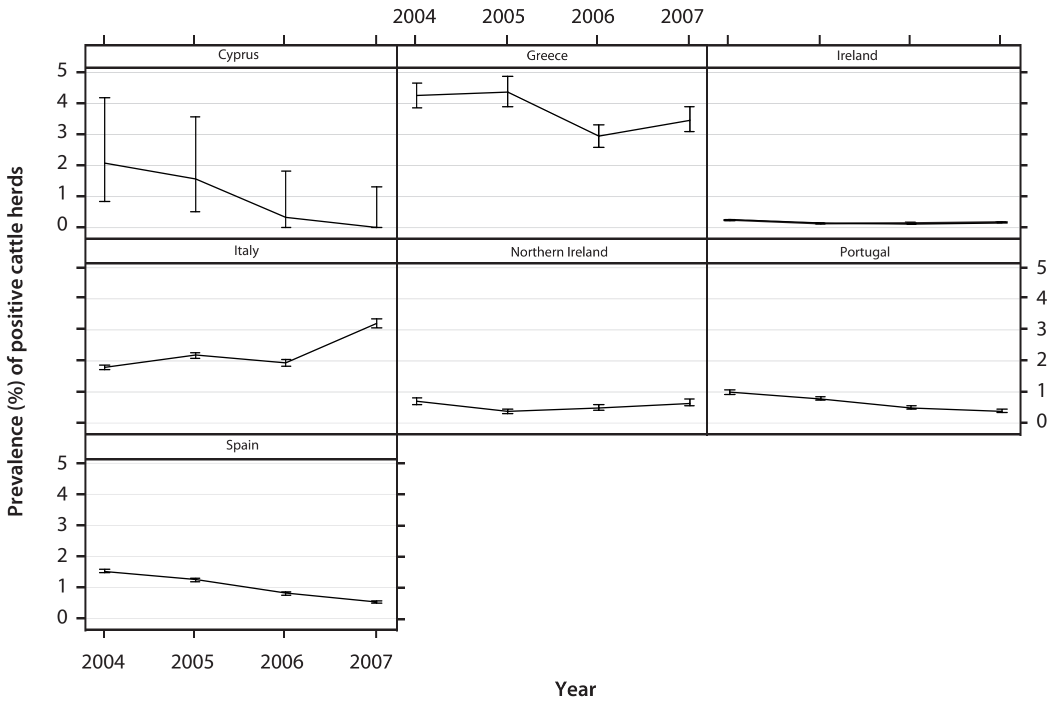
Since 2004, the prevalence of herds that tested brucellosis positive (the second epidemiological indicator) appears to have decreased or remained at a low level in most of the co-financed non-OBF MSs (Cyprus, Ireland, Portugal, Spain and the United Kingdom (Northern Ireland)). The exceptions were Greece, who observed a slight increase from 2006 to 2007 and Italy, who observed a more substantial increase (Figure BR8b). However, in Italy several provinces were declared OBF in 2007, and in some other provinces the occurrence was so low that they did not receive co-financing for eradication programmes. Therefore, Italian data from 2007 reflects more the results of regions having the highest prevalence than the situation in the whole country.

Figure BR8a. | ***Weighted[1] mean prevalence and 95% CI of cattle herds that tested positive for brucellosis in the seven co-financed non-OBF MSs, 2004-2007[2]***



1. Weight is the reciprocal of the ratio between the number of tested herds per MS per year, and the number of existing herds per MS in 2007
2. Includes data from: CY, GR, IE, IT, Northern Ireland, PT, ES. In Greece, eradication programmes have only been co-financed during 2004-2006

Figure BR8b. | ***Prevalence and 95% CI[1] of cattle herds that tested positive for brucellosis in the seven co-financed MSs[2], 2004-2007***



1. Vertical bars indicate exact binomial 95% confidence intervals
2. In Greece, eradication programmes have only been co-financed during 2004-2006

Sheep and goats

The status of the countries regarding freedom of ovine and caprine brucellosis caused by *B. melitensis* (ObmF) and occurrence of the disease in MSs and non-MSs in 2007 are presented in Figures BR9 and BR10. In 2007 Romania was recognised as being officially free of ovine and caprine brucellosis

Herds tested positive for ovine/caprine brucellosis were geographically clustered in southern Europe (Figure BR10).

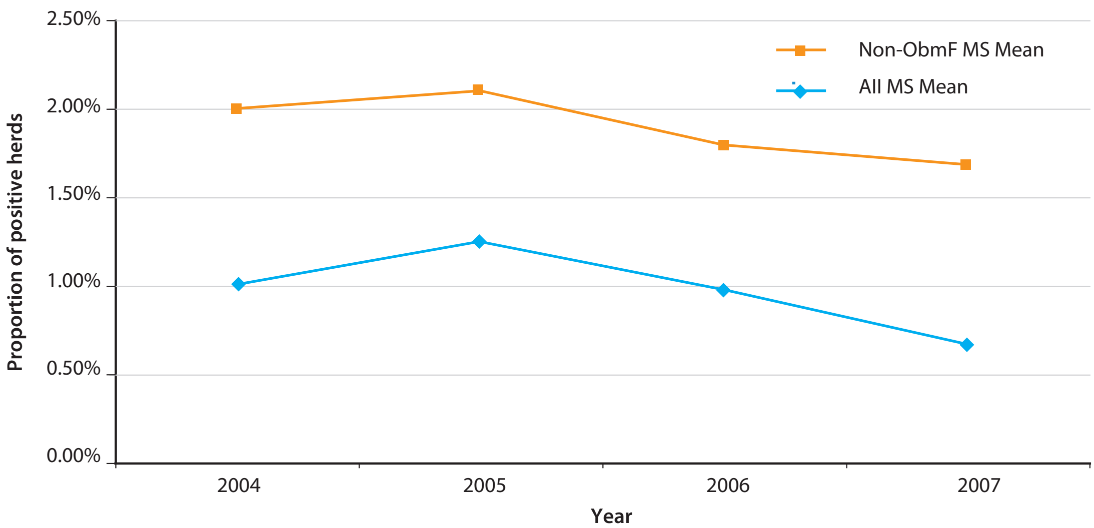
Figure BR9. | ***Status of ovine and caprine brucellosis* (B. melitensis)*, 2007***

Figure BR10. | ***Proportion of* Brucella *infected/positive sheep and goat herds, country-based data, 2007***

Note: A graduate colour ramp with class interval of 0.1 was used for the map symbology

The overall EU proportion of existing positive sheep and goat herds has decreased from 1.0% in 2004 to 0.7% in 2007. This observed decrease is mainly due to the inclusion of data from Romania in 2007, who joined the EU this year. Romania has more than 0.5 million sheep and goat herds (39% of all herds in the EU) of which 0.6% were reported positive for *Brucella*. However, the proportion of existing herds positive decreased also among the non-ObmF MSs, from 2.0% in 2004 to 1.7% in 2007 (Figure BR11).

Figure BR11. | ***Proportion of existing sheep and goat herds positive for* Brucella*, 2004-2007*[1]**



Note: Missing data from BG (2004-2007), DE (2005, 2006), LT (2007, 2005), LU (2006, 2004), LV (2004), MT (2004-2006), PL (2006), RO (2004-2006)
1. For 2004, the number of existing herds was based on the number of herds under control

Officially *B. melitensis* Free (ObmF) MSs, non-MSs and regions

In 2007, 16 MSs (Austria, Belgium, the Czech Republic, Denmark, Finland, Germany, Hungary, Ireland, Luxembourg, the Netherlands, Poland, Romania, Slovenia, Slovakia, Sweden and the United Kingdom) and Norway and Switzerland, were ObmF. In the ObmF MSs positive herds were only detected in Austria (two herds) and Romania (2,976 herds, i.e. 0.6% of the existing herds).

ObmF regions have been declared in France (64 departments), Italy (eight regions and five provinces), Portugal (all the Azores Islands) and Spain (two of the Canary Islands). In ObmF regions, positive herds were only detected in the region of Umbria in Italy (two herds).

Non-ObmF MSs

In 2007, 11 non-ObmF MSs reported a total population of 376,486 sheep and goat herds, of which 1.7% were found infected with or positive for *B. melitensis*. This was a decrease compared to the overall occurrence observed in 2006 (1.8%) (Figure BR11).

In 2007, three non-ObmF MSs without Community co-financed eradication programmes (Estonia, Latvia and Malta), reported no infected herds out of their total 11,269 existing ovine and caprine herds. *B. melitensis* has never been detected in Latvia and has not been detected in Estonia since the 1960s. Latvia is in the process of preparing their application for ObmF status.

Of the six non-ObmF MSs with Community co-financed eradication programmes, only France reported no positive sheep or goat herds in 2007. Overall, the proportion of existing positive herds decreased compared to 2006 in the co-financed MSs as did the proportion of those tested positive (Table BR6). In 2007, the proportion of existing positive herds was highest in Italy, Portugal and Spain.

For most of the co-financed MSs, both indicators were lower in 2007 than in 2006. Italy was an exception, where the proportion of existing positive herds increased as a result of a 20% reduction in the number of herds whereas the number of positive herds remained at the same level. Data from Greece only include information from the Greek islands (except Lesvos and Leros), where an eradication policy is applied. On the Greek mainland control strategy is based solely on mass vaccination. (Table BR6).

Table BR6. | **Brucella *in sheep and goat herds in co-financed non-ObmF MSs, 2005-2007***

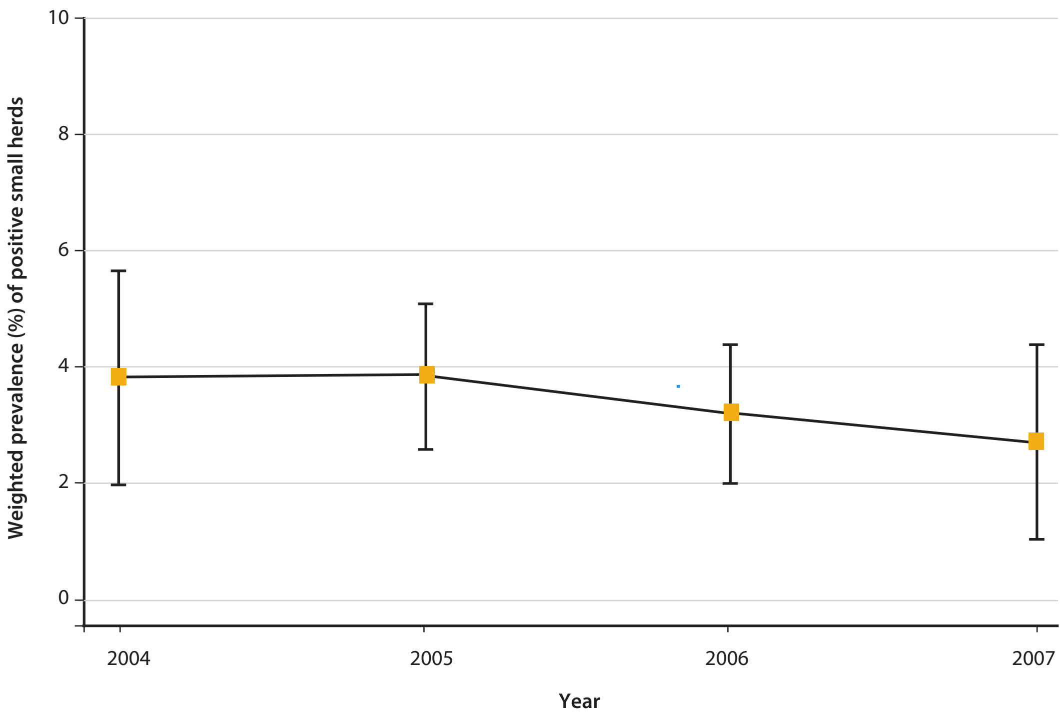
Non-officially free MSs	2007					2006		2005	
	No. of existing herds	No. of tested herds[1]	No. of positive herds[1]	% existing herds positive	% tested herds positive[1]	% existing herds positive	% tested herds positive[1]	% existing herds positive	% tested herds positive[1]
Cyprus	3,583	2,946	3	0.08	0.10	0.21	0.25	0.39	0.52
France[2]	143,052	13,345	0	0	0	0	0	0	0
Greece	22,985	1,119	34	0.15	3.04	0.23	4.66	0.23	5.13
Italy[3]	109,548	49,698	2,104	1.92	4.23	1.49	4.23	2.09	3.74
Portugal[4]	75,123	66,625	1,066	1.42	1.60	2.13	2.25	2.54	3.08
Spain[5]	124,758	110,523	3,117	2.50	2.82	2.93	3.20	4.04	4.43
Total (6 MSs)	**479,049**	**244,256**	**6,324**	**1.32**	**2.59**	**1.53**	**2.94**	**2.10**	**3.69**

1. Include only tested and positive herds from regions that have co-financed eradication programmes
2. In France 64 departments are officially free of *B. melitensis*. In the departments that are ObmF or do not have a co-financed eradication programme, none of the 127,503 existing herds were found infected. In the rest of France, no infected herds were reported since 2004
3. In Italy, five provinces and eight regions are officially free of *B. melitensis*. In the provinces that are ObmF or do not have a co-financed eradication programme, two of the 55,234 existing herds were found infected
4. In Portugal, the Azores are ObmF and Madeira is not co-financed. In these areas none of the 4,098 existing herds were found infected
5. Two of the Canary Islands are OmbF, and none of the 3,855 existing herds were found infected

A decreasing trend in overall prevalence was observed in the four reporting co-financed non-ObmF MSs with positive findings, but the logistic regression analysis indicated that this trend was not statistically significant (Figure BR12a). See Appendix 1 and notes to Figure BR12a for statistical descriptions.

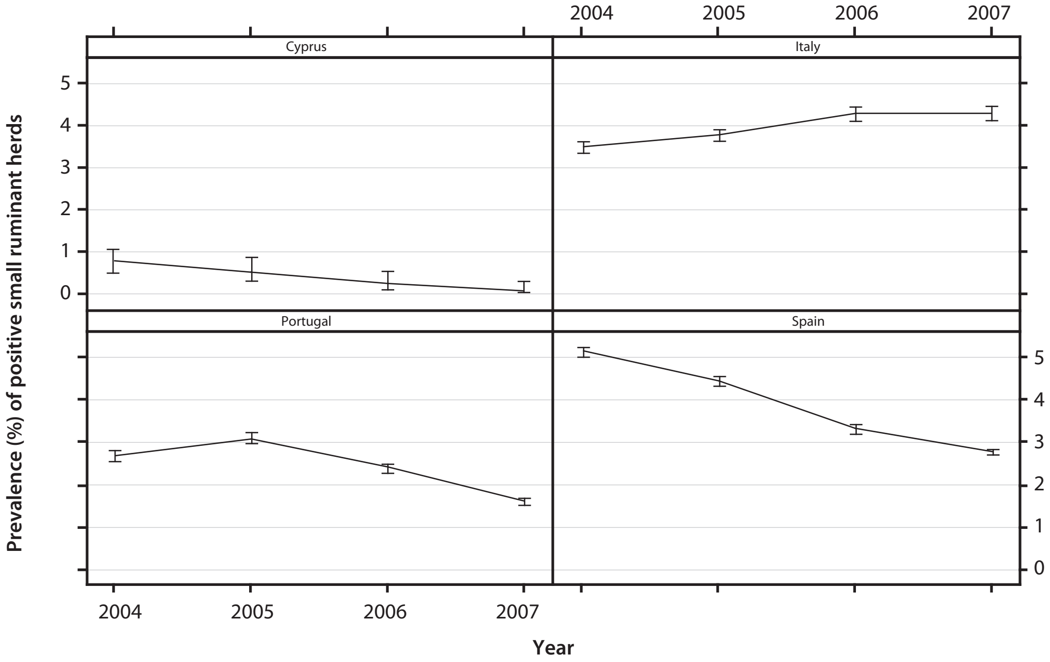
Since 2004, the prevalence of sheep and goat herds that tested positive for *B. melitensis* decreased in Cyprus, Portugal and Spain, while it appears to increase slightly in Italy (Figure BR12b). The reason for the apparent increase in Italy in positive tested herds is due to progress made in the eradication programme where the declared ObmF provinces and regions are no longer counted in co-financed programmes.

Figure BR12a. | ***Weighted[1] mean prevalence and 95% CI of sheep and goat herds that tested positive for*** **B. melitensis** ***in the four non-ObmF co-financed MSs, 2004-2007[2]***



1. Weight is the reciprocal of the ratio between the number of tested herds per MS per year, and the number of existing herds per MS in 2006
2. Includes data from: CY, IT, PT, ES

Figure BR12b. | ***Prevalence and 95% CI[1] of sheep and goat herds that tested positive for brucellosis* (B. melitensis)*, in the four non-ObmF co-financed MSs, 2004-2007***



1. Vertical bars indicate exact binomial 95% confidence intervals

Pigs and other animals

Porcine brucellosis is a rarely reported disease in the EU. In 2007, 18 MSs reported the testing of 322,256 pigs, of which only 159 pigs were found positive for *Brucella* spp. (Table BR7).

Table BR7. | **Brucella *spp. in pigs, 2007***

Country	Sampling unit	N	Pos	% Pos	Comment
Austria	Animal	1,140	27	2.37	
Belgium	Animal	259	1	0.39	*B. suis*
Czech Republic	Animal	136,444	2	0	
Denmark[1]	Animal	24,386	0	0	
Estonia	Animal	1,134	0	0	
Finland	Animal	3,428	0	0	
France[2]	Herd	Unknown	0	0	
Germany	Single	25,523	2	<0.1	*B.* spp. unspecified (2)
Hungary	Animal	77,457	0	0	
Italy	Animal	201	0	0	
Italy	Herd	103	0	0	
Italy	Single	628	119	18.95	Unspecified
Latvia	Animal	6,266	0	0	
Luxembourg	Animal	53	0	0	
Netherlands	Animal	5,789	0	0	
Poland	Animal	985	0	0	
Slovakia	Animal	7,018	0	0	
Spain	Animal	23,955	0	0	
Sweden[1]	Animal	4,451	0	0	
United Kingdom	Animal	3,138	0	0	
Total (17 MSs)		**322,256**	**159**	**0.05**	
Norway	Animal	1,450	0	0	

Note: Data are only presented for sample size ≥ 25. Serological tests and bacteriological confirmation of seropositive animals.

1. Breeding animals
2. In France, 2007 is the first year without any outbreak of porcine brucellosis in outdoor pig farms since 1996

In 2007, *B. suis* was isolated from domestic pigs by bacteriological tests in Belgium and Germany.

A variety of other animals were also tested for *Brucella* spp., including dogs, deer, foxes, hares, horses, mouflons, wild boars, and zoo animals. The majority (99%) of samples tested negative (Table BR8). *B. suis* was detected in hares in the Czech Republic and France. In wild boars, where *B. suis* is known to be endemic in some MSs, *B. suis* was detected in nine MSs.

For details please refer to Level 3 tables.

Table BR8. | **Brucella *spp. in other animals[1], 2007***

Species	Country	N	Pos	% pos
Alpacas	BE, UK	135	0	0
Antelopes	SE	1	0	0
Bison	PL	1	0	0
Buffalo	HU	106	0	0
Camels	HU, SE	19	0	0
Deer	BE, HU, PT, SK, ES, SE	2,426	11	0.5
Dogs	CZ, ES, HU, IE, IT, LV, NO, SK, SE, UK	2,380	0	0
Foxes	PT	3	0	0
Hares	CZ, FR, HU, IT, SK, ES, UK	3,231	69	2.1
Lamas	HU	2	0	0
Marine mammals	UK, FR[2]	46	14	30.4
Moose	SE	9	0	0
Mouflons	HU, SK, ES	40	0	0
Other animals	HU, IT	28	0	0
Other ruminants	SE	4	0	0
Pet animals, all	NL	114	0	0
Rabbits	HU	15	0	0
Reindeer	SE	178	0	0
Solipeds, domestic	CZ, DE, HU, IE, IT, PT, SK, ES	26,344	2	0
Wild animals	IT, ES	449	31	6.9
Wild boar	AT, FR, DE, HU, IT, LT, PT, ES, SE	8,388	1,165	13.9
Wolves	HU	2	0	0
Zoo animals, all	CZ, ES, IE, LT, PT, SK	2,250	0	0
Total (17 MSs)		**46,171**	**1,292**	**2.8**

1. Animals other than cattle, goats, sheep and pigs
2. Three strains of *B.ceti* isolated from bottlenose dolphins (*Tursiops truncatus*) in France (N unknown)

3.5.4 | Discussion

In 2007 as in previous years, most human brucellosis cases in the EU were reported by MSs which are not officially free of bovine or ovine/caprine brucellosis. This indicates that infected herds are still important sources of human infections. The scant data reported to TESSy on the vehicle of transmission confirms that contact with farm animals as well as consumption of cheese was the main transmission mode.

The notification rate of human brucellosis at EU level has decreased during the past years. This decrease may be interpreted as a result of the successful control and eradication programmes in animal populations in MSs. Many of the EU MSs already have an officially brucellosis-free status in animals and prevalence in non-free MSs is already low in their national cattle, sheep and goat herds. Eleven MSs are officially free of bovine brucellosis and ovine/caprine brucellosis. These are mainly the northern, western and eastern MSs. Also non-MSs, Norway and Switzerland, are officially free of both diseases.

At EU level, a marked decrease was observed in the proportion of existing cattle herds positive for, or infected with bovine brucellosis from 2006 to 2007. However, this decrease is only caused by the inclusion of data from Romania (MS since 2007), which has a large cattle population with no positive herds. In the Community of co-financed non-OBF MSs, both epidemiological indicators estimating the prevalence of bovine brucellosis increased compared to 2006. This increase in both indicators was specifically observed for Ireland, Italy and the United Kingdom (Northern Ireland). No significant trend was detected for bovine brucellosis positive tested cattle herds during the years 2004 to 2007 in co-financed non-OBF MSs.

In the case of small ruminant brucellosis, the proportion of existing positive herds or infected at EU level has decreased from 2004 to 2007 even though the trend is not statistically significant. In the Community of co-financed non-ObmF MSs, both epidemiological indicators estimating prevalence decreased compared to 2006. Italy was an exception, where the proportion of existing positive herds increased as a result of a reduction in the number of tested herds due to regions becoming officially free, whereas the number of positive herds remained at the same level in the remaining non-free regions.

Data reported in 2007 indicate that the prevalence of ovine/caprine brucellosis is decreasing in the EU, while for bovine brucellosis no clear trend was evident. This may illustrate the difficulties MSs encounter in eradicating the disease from their national herds when a low prevalence has already been reached.

Infected herds of both bovine and ovine/caprine brucellosis are geographically concentrated in southern European MSs, and for bovine brucellosis on the island of Ireland as well. It is also the southern European MSs: Greece, Italy, Portugal and Spain, where most of the confirmed human brucellosis cases were reported in 2007.

MSs frequently report brucellosis cases in humans as occupational cases, meaning that humans became infected from contact with infected animals, but human infection was also linked to the consumption of contaminated food, notably raw milk cheeses. Some MSs reported findings of *Brucella* in raw cow's and sheep's milk and cheeses thereof. This indicates that the health risk related to such foodstuffs is still relevant in the Community.

In most MSs vaccination of animals against brucellosis is forbidden. In Spain, vaccination is generally forbidden, but in areas with a high occurrence of bovine or ovine/caprine brucellosis vaccination is applied to control the disease. Currently, vaccination programmes are carried out among buffaloes in the area of Caserta (Campania) in Italy, in cattle herds in the Greek prefecture of Thessaloniki, in goat and sheep herds in Portugal and among sheep herds in Sicily, Italy, and on the Greek mainland and two islands.

Rabies | 3.6.

Rabies is a disease caused by a rhabdovirus of the genus *Lyssavirus*. This virus can infect all warm-blooded animals and is transmitted through contact with saliva from infected animals, typically from foxes and stray dogs, e.g. via animal bites. The disease causes swelling in the central nervous system of the host and is usually fatal. The majority of rabies cases are caused by the classical rabies virus (genotype 1). In addition, two sub-types of rabies virus, *Lyssavirus* genotypes five and six, also known as European Bat *Lyssavirus* (EBLV-1 and -2, respectively), are detected in bats in Europe. In rare cases, the infection from bats can be transferred to other mammals, including humans.

Symptoms in humans include a sense of apprehension, headache, fever and death. Human cases are extremely rare in industrialised countries. However, those working with bats and other wildlife are encouraged to seek advice on preventive immunisation.

In animals, pathogenicity and infectivity of the disease vary greatly among different species. Infected animals may exhibit a wide range of symptoms, including drooling, difficulty in swallowing, irritability, strange behaviour, alternating rage, apathy and increasing paralysis of lower jaw and hind parts. Animals may excrete the virus during the incubation period, up to 14 days prior to the onset of clinical symptoms.

Table RA1 presents countries reporting data in 2007.

Table RA1. | ***Overview of countries reporting data on* Lyssavirus*, 2007***

Data	Total number of MSs reporting	Countries
Human	20	**All MSs** except: AT, CY, DE, GR, IT, LV, PL **Non-MSs:** IS, NO
Animal	22	**All MSs** except for CY, LT, MT, RO, ES **Non-MSs:** NO, CH

3.6.1 | Rabies in humans

Generally, very few rabies cases in humans are reported in the EU, and most MSs have not had any indigenous cases for decades. In 2007, three cases, all fatal, were reported. Two of the cases were infected while travelling abroad and one was a foreign worker already infected when entering the EU (Table RA2).

Table RA2. | ***Human rabies cases, 2001-2007***

Year	Country	Case
2001	United Kingdom	1 visitor from Philippines
2002	United Kingdom	1 registered bat handler died from EBLV[1]
2003	France	1 visitor from Gabon
2004	Austria	1 case imported from Morocco
	Germany	1 imported case
2005	Germany	4 cases in total: 3 patients became ill after receiving organs from a rabies infected donor. The donor was infected during a trip to India.
2006		No cases
2007	Finland	1 case from the Philippines who was bitten by a dog in his home country, fell ill with rabies when working on a ship in the Baltic Sea and was hospitalised in Finland and died there.
	Germany	1 case imported from Morocco
	Lithuania	1 case imported from India after contact with a dog

1. EBVL: European Bat Lyssavirus

3.6.2 | Rabies in animals

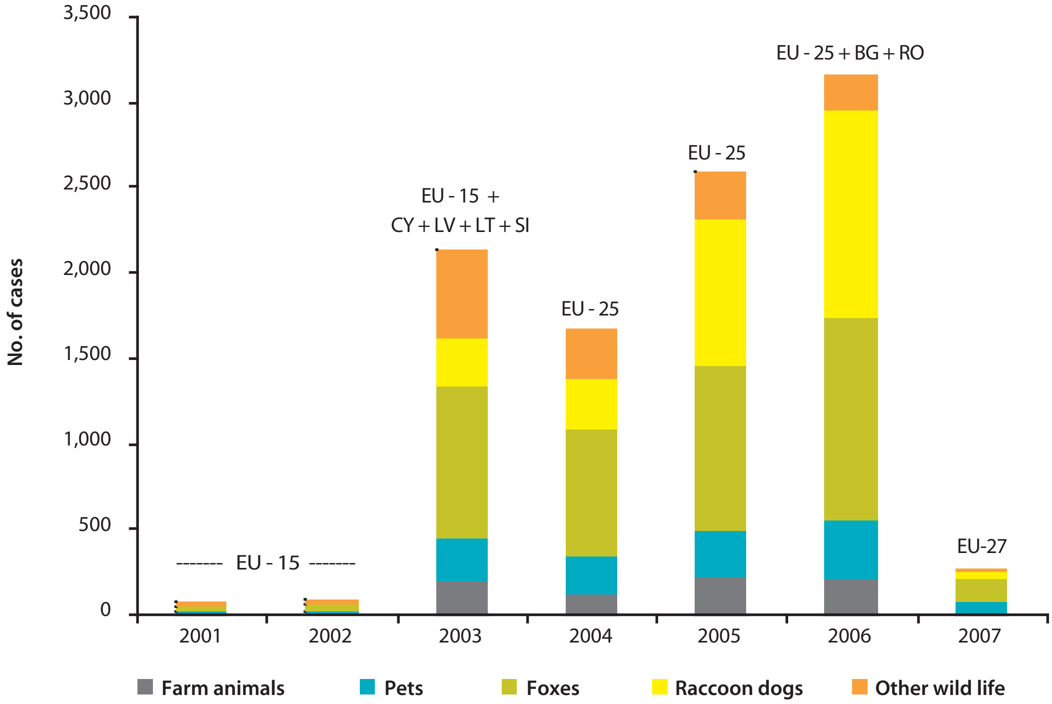
Nine MSs: Belgium, Cyprus, Finland, Greece, Italy, Luxembourg, Malta, Portugal, Sweden and Norway (mainland) have had no reports of indigenous rabies in animals since at least 2001 (either classical rabies or EBLV). Denmark, France and the United Kingdom have not reported indigenous cases of classical rabies for many years, but EBLV has been reported in bats, sheep (Denmark) and cats (France).

In 2007, all MSs with animal cases of classical rabies have implemented rabies eradication programmes focussing on wildlife population, mainly foxes, and in some MSs also on raccoon dogs. These eradication programmes concentrate on oral vaccination of wildlife through baits. Thirteen MSs: Austria, Bulgaria, Czech Republic, Estonia, Finland (along the south-eastern border), Germany, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia have programmes approved and co-financed by the European Commission (Decision 2007/851/EC). In addition, Italy (in the Friuli-Venezia-Giulia region) had a similar eradication programme in 2007. Vaccination of carnivorous pets, such as dogs and cats, against rabies is compulsory in 14 MSs including all 13 MSs with co-financed vaccination programmes. For more detailed information on vaccination programmes see Appendix Table RA1.

Samples from farm animals and pets and in many cases from wildlife species are collected based on suspicion of a potential rabies infection. However, Austria, the Czech Republic, Finland, Italy, Latvia, Poland and Slovenia provided information from rabies monitoring programmes as well. These programmes all focus on measuring the antibody response in foxes from areas where oral baits with rabies vaccination are distributed by air planes.

In 2007 at EU level, a large reduction in the number of reported cases of classical rabies or unspecified *Lyssavirus* in animals was observed compared to previous years (Figure RA1). Estonia, Latvia and Poland reported a reduction in the number of positive samples especially in foxes and raccoon dogs. However, the main reason for the reduction is because Lithuania and Romania did not report data from 2007. Lithuania have accounted for more than 60% of all positive samples reported in the EU during the last couple of years, and Romania reported 8% of all positive cases in 2006, which was its first reporting year.

Figure RA1. ***Reported cases of classical rabies or unspecified* Lyssavirus *in animals in the EU and other reporting countries, 2001-2007***



In 2007, eight MSs reported findings of classical rabies in one or more animal species and two of these MSs reported illegally imported cases only (Table RA3). This is a decrease compared to 2006 where 14 MSs and two non-MSs (Bulgaria and Romania were not MSs in 2006) reported positive findings. Most of the cases in 2007 were reported from foxes (51.9%) (Figure RA1). Latvia was the only MS to report positive cases both in farmed animals, pets and wildlife in 2007. In 2006, six MSs reported cases in all three groups.

In 2007, only seven cases of classical rabies in farm animals (all from cattle) were reported from Estonia and Latvia. Additionally, 75 cases of classical rabies in pets were reported by MSs: 38 cases were from cats and 37 from dogs. Two of the positive cases from illegally imported dogs were tested positive with the classical rabies virus from Morocco and from India, reported by Belgium and Finland, respectively (Table RA3). Latvia reported the highest proportion of positive samples in domestic animals (16.4%) (Figure RA2).

Figure RA2. | ***Classical rabies or unspecified* Lyssavirus *cases in domestic animals, 2007***

Note: All data provided was from sampling based on suspicion or other convenience type sampling

Findings in the following species are included:

pigs, cattle (bovine animals), goats, sheep, solipeds, ferrets (pet animals), guinea pigs (pet animals), rabbits (pet animals), cats (not stray cats) and dogs (not stray dogs)

Additionally, France reported one cat positive with European Bat *Lyssavirus1*

In the map, a natural break classification method is used

Table RA3. | ***Proportion of positive cases[1] of rabies in domestic animals and wildlife, 2007***

							Classical rabies virus or			
Country	**Farm animals[2]**		**Cats (pets)**		**Dogs (pets)**		**Foxes**		**Raccoon dogs**	
	N	**% pos**	**N**	**% pos**	**N**	**% pos**	**N**	**% pos**	**N**	**% pos**
Austria	14	0	93	0	63	0	8,190	0	0	-
Belgium[4]	356	0	9	0	18	5.6	141	0	-	-
Bulgaria	73	0	14	50.0	49	14.3	40	60.0	-	-
Czech Republic[3]	7	0	152	0	91	0	4,424	0	1	0
Denmark	-	-	-	-	-	-	3	0	-	-
Estonia	44	4.5	103	0	37	0	83	0	75	1.3
Finland[3, 5]	4	0	8	0	14	7.1	261	0	222	0
France[6]	25	0	419	0	644	0	220	0	-	-
Germany	286	0	329	0	85	0	14,845	0	431	0
Greece	-	-	3	0	14	0	1	0	-	-
Hungary	76	0	375	0.3	259	0	4,496	0.1	-	-
Ireland	-	-	-	-	-	-	0	-	0	-
Italy	2	0	145	0	359	0	2,143	0	-	-
Latvia[3]	21	23.8	192	14.1	133	18.8	5,124	1.9	1,497	2.2
Luxembourg	1	0	5	0	-	-	23	0	-	-
Netherlands	-	-	5	0	2	0	10	0	-	-
Poland	88	7	673	0.4	540	0.6	16,044	0.3	94	7.4
Portugal	-	-	4	0	10	0	53	0	-	-
Slovakia	7	0	159	0	285	0	3,747	0	-	-
Slovenia	-	-	56	0	34	0	1,884	0.2	-	-
Sweden	1	0	3	0	-	-	-	-	-	-
United Kingdom[7]	-	-	14	0	15	0	3	0	-	-
EU-Total	**1,005**	**1.3**	**2,761**	**1.4**	**2,652**	**1.4**	**61,735**	**0.3**	**2,320**	**1.8**
Norway	-	-	-	-	2	0	29	0	-	-
Switzerland	1	0	9	0	12	0	41	0	-	-
Total (EU+non-MSs)	**1,006**	**0.3**	**2,770**	**1.4**	**2,666**	**1.4**	**61,805**	**0.3**	**2,320**	**1.8**

1. Positive cases are from passive surveillance (mainly sampling based on suspicion) except for most of the data reported from foxes. For more information see table RA4
2. Include cattle, sheep, goats, solipeds and pigs
3. Additionally, Czech Republic analysed one pet rabbit, Finland analysed one pet guinea pig and Latvia analysed one pet ferret, all were negative for rabies
4. In Belgium, one dog illegally imported from Morocco
5. In Finland, one dog illegally imported from India
6. In France, one cat was reported positive with EBLV type 1
7. In the United Kingdom, the infected bats were positive with EBLV type 2

unspecified *Lyssavirus*								Unspecified European Bat *Lyssavirus*	
Marten		Badgers		Deer		Other		Bats	
N	% pos	N	% pos	N	% pos	N	% pos	N	% pos
735	0	69	0	31	0	50	0	45	0
-	-	-	-	41	0	14	0	23	0
3	0	-	-	1	0	8	25.0	-	-
37	0	9	0	19	0	46	0	8	0
-	-	-	-	-	-	-	-	22	9.1
7	0	3	33.3	11	0	10	0	-	-
5	0	5	0	-	-	29	0	3	0
8	0	2	0	2	0	57	0	143	2.1
247	0	123	0	432	0	642	0	90	6.7
-	-	-	-	-	-	2	0	1	0
12	0	103	0	44	0	99	0	4	0
0	-	0	-	0	-	0	-	0	-
205	0	156	0	49	0	137	0	1	0
30	13.3	15	20.0	39	2.6	64	14.1	0	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	154	4.5
164	0.6	37	2.7	129	0	754	0.5	104	2.9
-	-	-	-	-	-	2	0	-	-
16	0	6	0	6	0	82	0	1	0
-	-	-	-	9	0	43	0	-	-
-	-	-	-	-	-	-	-	26	0
-	-	-	-	-	-	3	0	1,233	0.1
1,469	**0.3**	**528**	**0.9**	**813**	**0.1**	**2,042**	**0.7**	**1,858**	**1.2**
-	-	-	-	-	-	1	0	-	-
-	-	-	-	-	-	2	0	16	0
1,469	**0.3**	**528**	**0.9**	**813**	**0.1**	**2,045**	**0.7**	**1,874**	**1.2**

As in 2006, positive samples from foxes represented 70% of all positive findings from wildlife and 50.4% of all positive findings. Positive samples from raccoon dogs accounted for 18.2% of all positive findings, which is a decrease compared to 2006. Figure RA3 shows the proportion of classical rabies and unspecified *Lyssavirus* positive samples in wildlife animal species other than bats in reporting countries. All MSs reporting positive cases in wildlife are from the east of the EU.

Figure RA3. | ***Classical rabies or unspecified* Lyssavirus *cases in wild animals other than bats, 2007***

Note: Most data provided was from sampling based on suspicion or other convenience type sampling, except for Austria, Czech Republic, Finland, Italy, Latvia, Poland and Slovenia, who also provided data from a monitoring programme on foxes
Findings in the following species are included:

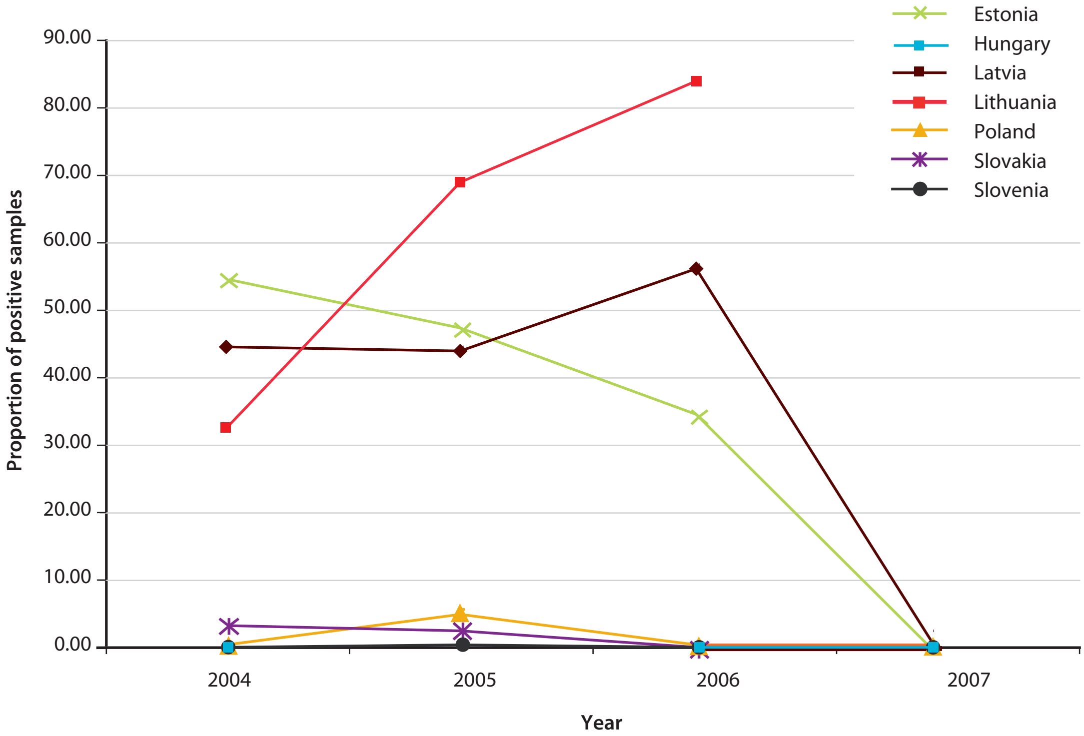
badgers, bears, beavers, cats (stray cats), deer, dogs (stray dogs), dormice, ferrets (not pets), foxes, guinea pigs (not pets), hamsters, hares, hedgehogs, lynx, marten, mice, minks, moles, monkeys, moose, octodons, other carnivores, other mustelides, other ruminants, otters, polar bears, polecats, rabbits (not pets), raccoon dogs, raccoons, rats, rodents, squirrels, voles, weasels, wild animals, wild boars, wolves

A graduate colour ramp with class interval of 0.1 was used for the map symbology

In 2007, seven MSs reported data from monitoring programmes surveying rabies in foxes and an additional eight countries reported data on a continuous basis from foxes (Table RA4). Out of these countries, Estonia, Latvia and Lithuania have reported substantial proportions of positive samples in previous years, while Belgium, the Czech Republic, Finland, France, Italy, Portugal and Switzerland reported no positive animals between 2004 and 2007. Austria reported one infected animal (positive with the vaccination virus strain) in 2006 and another animal in 2004; and Poland and Slovenia reported low proportions of positive animals throughout these years. All MSs underline the necessity of continuous vaccination programmes with distribution of baits to foxes and raccoon dogs in risk areas and in border areas due to the continuous risk of the reintroduction of the disease from neighbouring eastern countries.

Latvia and Estonia reported large reductions in the proportion of positive rabies samples in foxes after the introduction of vaccination campaigns; Latvia recorded a decrease from 44% to 56% positive foxes in 2004 to 2006 to 2% positive foxes in 2007 and Estonia reported a reduction from 34% to 54% in 2004 to 2006 to no positive samples in 2007. Lithuania was the only MS to report an increased number of cases between the years 2004 and 2006, but Lithuania did not report data on rabies for 2007 (Figure RA4).

Figure RA4. | ***Proportion of positive samples of rabies in foxes in the EU, 2004-2007***



Note: Latvia, Poland and Slovenia report data collected as part of a monitoring programme, where the effect of the vaccination bait is analysed by measuring the antibody response. Austria, Belgium, Finland, France, Italy, Portugal and Switzerland reported annual data from 2004-2007 with no positive cases

Table RA4. | ***Proportion of positive rabies samples from countries providing continuous data from foxes, 2004-2007***

Countries with a monitoring programme								
Country	**2007**		**2006**		**2005**		**2004**	
	Total	**% pos**	**Total**	**% pos**	**Total**	**% pos**	**Total**	**% pos**
Austria[1]	8,190	0	7,215	<0.1	8,706	0	9,772	<0.1
Czech Republic	4,424	0	7,066	0	8,242	0	8,186	0
Estonia	83	0	111	34.2	202	47.0	169	54.4
Finland	261	0	230	0	216	0	321	0
Latvia	5,124	1.9	336	55.7	402	43.8	409	44.3
Lithuania			824	83.4	778	68.5	609	32.3
Poland	16,044	0.3	21,908	0.2	1,685	5.0	19,875	0.4
Slovenia	1,884	0.2	1,645	0.1	1,248	0.2	1,324	0.2
Countries with annual data, but no information on monitoring provided								
Country	**2007**		**2006**		**2005**		**2004**	
	Total	**% pos**	**Total**	**% pos**	**Total**	**% pos**	**Total**	**% pos**
Belgium	141	0	94	0	117	0	211	0
France	220	0	336	0	616	0	379	0
Germany	14,845	0	13,763	<0.1	20,867	0.2		
Hungary	4,496	0.1	3,601	0.1			4,758	2.3
Italy	2,143	0	2,303	0	2,857	0	2,554	0
Portugal	53	0	41	0	42	0	40	0
Slovakia	3,747	0	3,630	0.1	1,767	2.4	1,563	3.0
Switzerland	41	0	52	0	56	0		

1. In Austria in 2006, one fox tested positive with the vaccination strain not with the wild strain

In 2007, EBLV was reported from bats in six MSs: Denmark, France, Germany, the Netherlands, Poland and the United Kingdom (Table RA3). All these MSs reported unspecified EBLV except the United Kingdom, who specified the case to be EBLV type 2. EBLV in other animals was reported from France where EBLV type 1 was found in a cat. Generally, EBLV cases are reported in MSs with no or very little classical rabies cases in animals (Figure RA5). The United Kingdom was the only MS to report data from a specific monitoring programme on bats.

For additional information on data on rabies in animals and the historical overview of findings, please refer to Level 3 tables.

Monitoring programme in the United Kingdom

Since 1987, the United Kingdom has had a passive surveillance programme of scanning for EBLV in bats. This programme involves testing dead bats usually submitted by bat workers. From 1987 to 2005, 6,697 bats were tested for Lyssavirus and only five animals were positive for EBLV. In 2007, 1,204 bats were submitted for testing under the programme and one was positive.

A three-year active surveillance programme for testing bats for EBLV in England and Scotland took place between 2003 and 2006. One out of 273 bats tested was positive for EBLV type 1. Further, results from the surveillance indicated a 2% seroprevalence estimate of EBLV type 2 in Britain's Daubenton's bats. All oral swabs tested were negative.

Figure RA5. | ***European Bat* Lyssavirus *(EBLV) or unspecified* Lyssavirus *cases in bats, 2006-2007***

Note: All data provided were from sampling based on suspicion or other convenience type sampling, except for the United Kingdom where passive surveillance is carried out
For Estonia data from 2006 was used
In the United Kingdom, the infected bats were positive with EBLV type 2
A graduate colour ramp with class interval of 0.1 was used for the map symbology

3.6.3 Discussion

In 2007, three human cases of rabies acquired outside the EU were reported by MSs. Indigenous human cases of classical rabies have not been reported within the EU for many years except for one human case infected with EBLV in 2002. However, since rabies is present in the animal population in the EU and its neighbouring countries, all persons that have been bitten by an animal, which might carry the rabies virus, must seek medical advice and have prophylactic treatment after the potential exposure. In all MSs this is common practise when a person is perceived to be at risk.

In animals, most MSs have reported no or very few cases of classical rabies for many years. An exception is the Baltic and some south-eastern European MSs where rabies is still prevalent in wildlife and also in farm and pet animals. Most positive cases of classical rabies were reported in foxes and raccoon dogs.

The significant decrease in the total number of positive animal cases observed in 2007 is mainly due to two MSs that had reported substantial numbers of cases in previous years but did not provide any data in 2007. However, it is also important to observe that Estonia, Latvia and Poland have reported a reduction in the number of positive animal samples during the past years, especially in foxes and raccoon dogs. All three MSs have Community co-financed vaccination programmes for foxes and the results achieved by the implementation of the programme are monitored. The observed reductions are likely to result from the successful vaccination campaigns.

The European Bat *Lyssavirus* (EBLV) is mostly recorded from bats, but in 2007 a positive case was also reported in a cat. This demonstrates the risks related to the transmission of the virus to other animal species. Generally, MSs provide very sporadic information on EBLV infection and only the United Kingdom reported data from a specific monitoring programme. It is possible that MSs not testing bats for EBLV may also have the infection in their bat population but it remains undetected. EBLV is known to infect humans and more information on the distribution of the disease in the wildlife population would be desirable.

In order to eradicate classical rabies from animal populations throughout the EU, and to avoid the reintroduction of rabies from countries bordering the east of the EU, continuous surveillance and vaccination programmes are important in high-risk areas. MSs with classical rabies in animals implement eradication programmes where vaccine baits are distributed by airplanes to wildlife. Consequently, the reported proportion of rabies infected animals within most MSs is decreasing.

Almost every year, one or two MSs report cases of rabies in illegally imported pets. Therefore, information campaigns for the public about the risk related to importing pets without proper rabies vaccination are important. Some MSs have carried out such campaigns regularly e.g. France and Spain.

Verotoxigenic *Escherichia coli* | 3.7.

Verotoxigenic *Escherichia coli* (VTEC) are a group of *E. coli* that are characterised by the ability to produce toxins that are designated verocytotoxins[1]. Human pathogenic VTEC usually harbour additional virulence factors that are important for the development of the disease in man. A large number of serogroups of *E. coli* have been recognised as verocytotoxin (VT) producers. Human VTEC infections are, however, associated with a minor number of O:H serogroups. Of these, the O157:H7 or the O157:H- serogroups (VTEC O157) are the ones most frequently reported to be associated with the human disease.

The majority of reported human VTEC infections are sporadic cases. The symptoms associated with VTEC infection in humans vary from mild to bloody diarrhoea, which is often accompanied by abdominal cramps, usually without fever. VTEC infections can result in haemolytic uraemic syndrome (HUS). HUS is characterised by acute renal failure, anaemia and lowered platelet counts. HUS develops in up to 10% of patients infected with VTEC O157 and is the leading cause of acute renal failure in young children.

Human infection may be acquired through the consumption of contaminated food or water, or by direct transmission from person to person or from infected animals to humans.

Animals are a reservoir for VTEC, and VTEC (including VTEC O157) have been isolated from many different animal species. The gastrointestinal tract of healthy ruminants seems to be the foremost important reservoir for VTEC and foods of bovine and ovine origin are frequently reported as a source for human VTEC infections. Other important food sources include faecally contaminated vegetables and drinking water. The significance of many VTEC types that can be isolated from animals and foodstuffs for infections in humans is, however, not yet clear.

Table VT1 presents the countries reporting data for 2007.

Table VT1. | ***Overview of countries reporting data for 2007***

Data	Total number of MSs reporting	Countries
Human	23	**MSs:** All MSs, except CY, CZ, PT, RO **Non-MSs:** CH, IS, NO
Food	25	**MSs:** All MSs, except CY and MT **Non-MSs:** CH, NO
Animal	26	**MSs:** All MSs. Except MT **Non-MSs:** CH, NO

Note: In the food and animal chapter, only countries reporting 25 samples or more have been included in the analyses

3.7.1. | VTEC in humans

Twenty-two MSs reported data on human VTEC infections in 2007. The total number of confirmed VTEC cases in the EU reported to TESSy was 2,905, representing a 13.5% decrease from 2006 (3,357 cases). The overall notification rate of VTEC infection reported by the 23 MSs was 0.6 cases per population of 100,000 (Table VT2). Overall, the United Kingdom and Germany accounted for 69.5% of all cases in the EU in 2007.

Figure VT1 illustrates the geographical distribution of the reported notification rates in the EU. In several countries, infection with VTEC is not notifiable (see Appendix, Table VT2). The different sensitivities of the reporting systems of the MSs may have also influenced these figures. Consequently, comparison between countries should be done with caution. Comparison between years within a country is, in general, more valid.

Figure VT1. | ***VTEC notification rates in humans in the European Community, 2007 (per population of 100,000)***

Note: A graduate colour ramp with class interval of 0.1 was used for the map symbology

Table VT2. | ***Reported VTEC cases in humans, 2003-2007 and notification rates for confirmed cases, 2007[1]***

Country	2007				2006	2005	2004	2003
	Report Type[2]	Cases	Confirmed Cases	Cases/ 100,000				
Austria	C	82	82	1.0	41	53	45	28
Belgium	C	47	47	0.4	46	47	45	47
Bulgaria[3]	0	0	0	0				
Cyprus	–	–	–					
Czech Republic	–	–	–		–		–	
Denmark	C	161	156	2.9	146	154	163	128
Estonia	C	3	3	0.2	8	19	0	
Finland	C	12	12	0.2	14	21	10	14
France	C	57	57	0.1	67			
Germany	C	870	870	1.1	1,183	1,162	903	1,100
Greece	C	1	1	<0.1	1			
Hungary	C	1	1	<0.1	3	5	12	20
Ireland	C	167	115	2.7	153	125	61	95
Italy	C	61	27	<0.1	17		3	5
Latvia	C	0	0	0				
Lithuania	0	0	0	0	0			
Luxembourg	C	1	1	0.2	2	8		
Malta	C	4	4	1.0	21	23		
Netherlands	C	88	88	0.5	41	64	30	51
Poland	C	2	2	<0.1	4	4	3	
Portugal	–[4]	–	–					
Romania[3]	–[4]	–	–					
Slovakia	C	6	6	0.1	8	61	4	1
Slovenia	C	4	4	0.2	30		2	
Spain	C	18	18	<0.1	13	16		
Sweden	C	262	262	2.9	265	336	149	52
United Kingdom	C	1,149	1,149	1.9	1,294	1,171	926	974
EU Total		**2,996**	**2,905**	**0.6**	**3,357**	**3,269**	**2,356**	**2,515**
Iceland	C	13	13	4.2	1			
Liechtenstein	–	–	–					
Norway	C	26	26	0.6	50	18	12	15
Switzerland	C	69	53	0.7	48	52	45	56

1. Number of confirmed cases for 2005-2007 and number of total cases for 2003-2004
2. A: aggregated data report; C: case-based report; –: no report; U: unspecified
3. EU membership began in 2007
4. No surveillance system exists

More than half (54.1%) of reported confirmed human VTEC infections in 2007 were associated with the O157 serogroup (Table VT3). The majority of O157 cases (71.3%) were reported from the United Kingdom though they focus their surveillance mainly on identifying O157. The difference in the ranking of serotypes compared to 2006 may partly be the result of more countries reporting VTEC O-groups in 2007 (Table VT4).

Table VT3. | ***Reported confirmed VTEC cases in humans by serogroup (top 10), 2006-2007 (TESSy)***[1]

2007				2006			
Serogroup	**No. of cases**	**% Total**	**% Known**	**Serogroup**	**No. of cases**	**% Total**	**% Known**
O157	1,571	54.1	54.1	O157	1,583	48.1	69.2
NT	842	29.0	29.0	O26	123	3.7	5.4
O26	136	4.7	4.7	O103	86	2.6	3.8
O103	77	2.7	2.7	O119	86	2.6	3.8
O91	43	1.5	1.5	O111	65	2.0	2.8
O145	31	1.1	1.1	O86	61	1.9	2.7
O111	23	0.8	0.8	O91	42	1.3	1.8
O128	21	0.7	0.7	O145	31	0.9	1.4
O113	16	0.6	0.6	O124	28	0.9	1.2
O146	14	0.5	0.5	O44	28	0.9	1.2
Other	130	4.5	4.5	Other	156	4.7	6.8
Unknown	0	0.0	-	Unknown	1005	30.5	-
Total	**2,904**			**Total**	**3,294**		

Source: Austria, Belgium, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Italy, Luxembourg, Malta, the Netherlands, Poland, Slovakia, Slovenia, Spain, Sweden and the United Kingdom

NT = untyped/untypeable

1. Please note that Czech Republic has been removed from the 2006 data as their cases represented enteropathogenic *E. coli* and not specifically VTEC

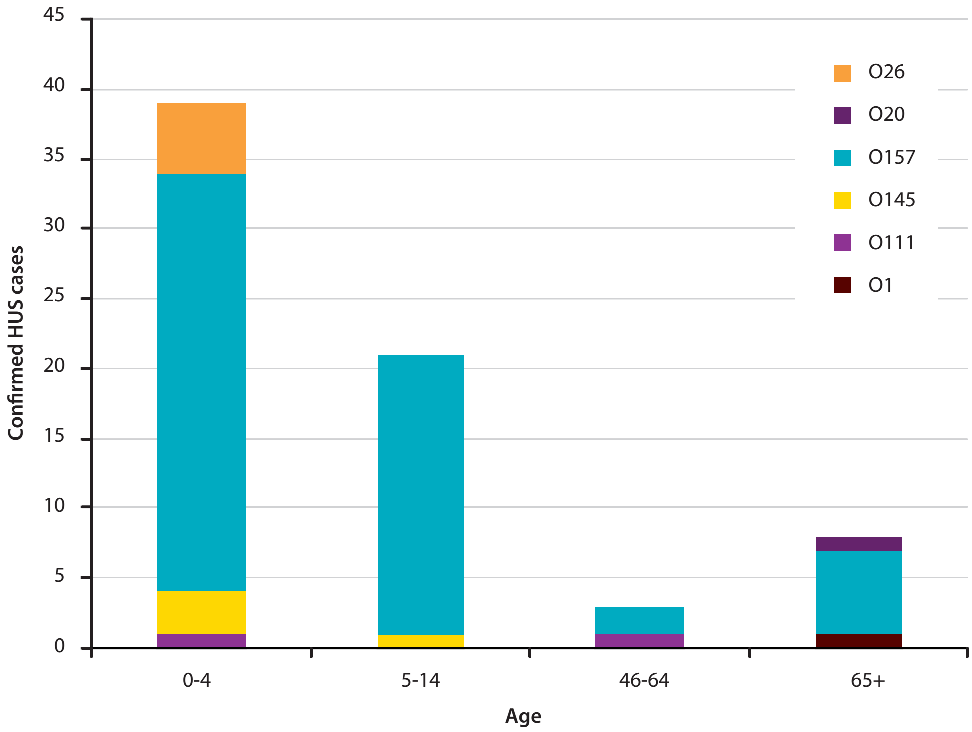
Table VT4. | ***VTEC serogroups by country, 2007 (TESSy data)***

Country	Serogroups										
	O157	NT	O26	O103	O91	O145	O111	O128	O113	O146	Other
Austria	17	41	1	3	2	7	2			2	7
Belgium	25	3	5	2	1	2	2		1	2	4
Denmark	25	1	28	16	9	5	4	8	5	8	47
Estonia	2							1			
Finland	9	3									
France	14	29	10		1		1	1			1
Germany	66	577	61	46	26	13	12	9	8	1	51
Hungary	1										
Ireland	94	5	13			1	1	1			
Italy	5	20	1				1				
Luxembourg	1										
Malta	4			3							
Netherlands	80	1	3	1	1						
Poland	2			6							
Slovakia	3	3									
Slovenia											4
Spain	18										
Sweden	85	138	13		3	1		1	2	1	12
United Kingdom	1,120	21	1			2					4
Total (19 MSs)	**1,571**	**842**	**136**	**77**	**43**	**31**	**23**	**21**	**16**	**14**	**130**
Iceland	13										
Norway	5	7	3	1		4		2		1	3

The largest proportion (34.2%) of reported VTEC infections occurred in those aged 0 to 4 years.

A total of 103 haemolytic uremic syndrome (HUS) cases associated with VTEC infections were reported in MSs in 2007. The majority of HUS cases were reported by Germany (31), Italy (25) and the United Kingdom (23). Most of the reported HUS cases were associated with the VTEC O157 infection, with the highest numbers of cases among the youngest age categories (Figure VT2).

Figure VT2. | ***Haemolytic Uremic Syndrome (HUS) by age and serogroup in reporting MSs[1], 2007***



Source: Belgium, Denmark, Germany, Hungary, Ireland, Italy, the Netherlands, Slovenia and the United Kingdom (N = 103)

As in previous years, the distribution of VTEC infections in 2007 followed a seasonal pattern, with a rise in case counts over the summer and autumn months. This seasonal pattern was largely influenced by the increases in VTEC O157 infections during these months. The non-O157 cases were less seasonally variable.

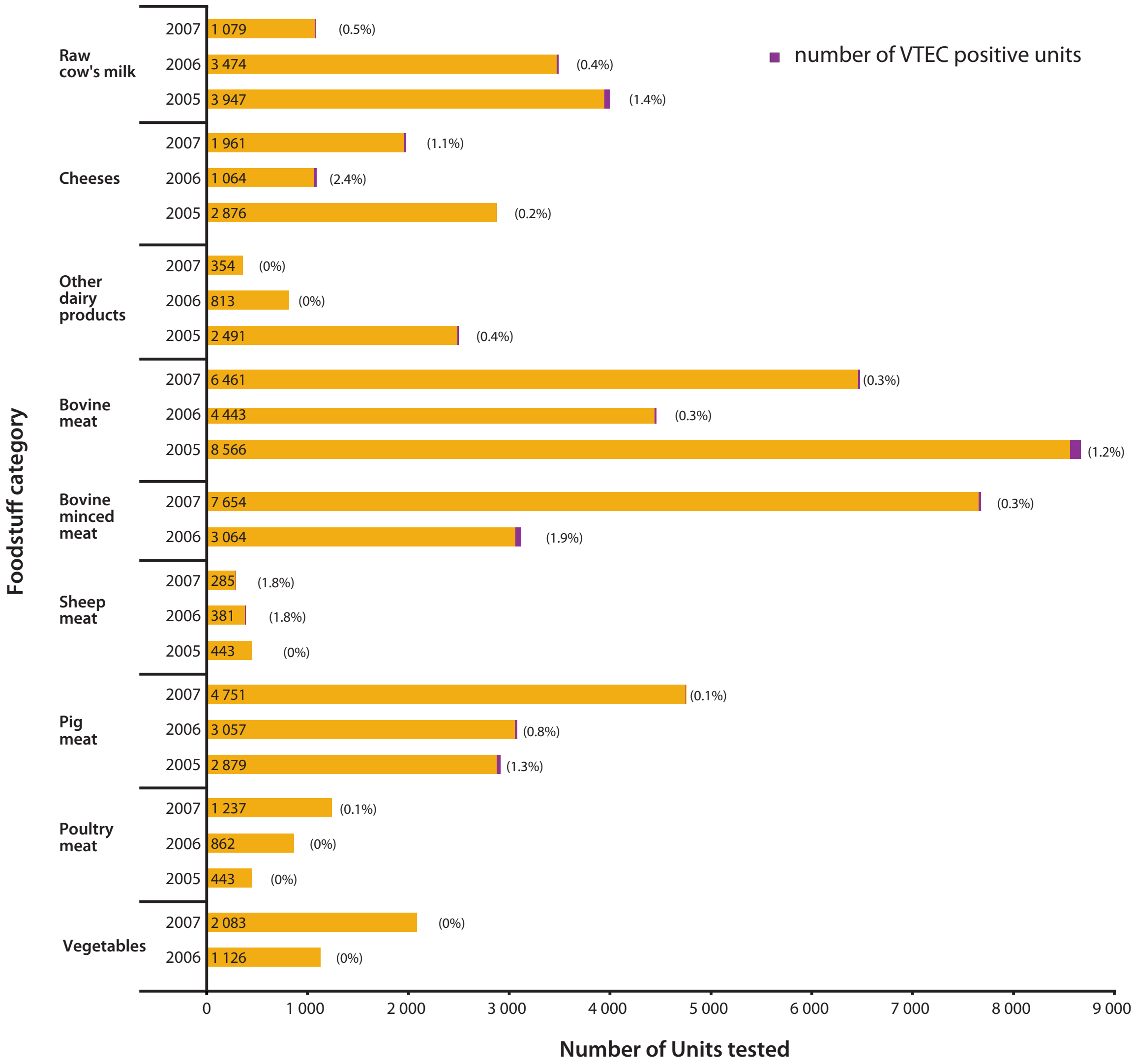
3.7.2. | VTEC in food and animals

Twenty MSs and one non-MS reported data on VTEC in food and 14 MSs reported data on VTEC in animals from the year 2007. An overview of the food categories investigated, the number of samples tested and the number of VTEC positive samples for the years 2005 to 2007 are presented in Figure VT3. Table VT5 presents the findings in fresh bovine meat and data from bovine animals are presented in Table VT6. All reported data are presented in Level 3.

When interpreting VTEC data from food and animals it is important to note that data from different investigations are not directly comparable, especially between countries. This is mainly due to differences in sampling strategies and applied analytical methods. The most widely used analytical method only aims at detecting *E. coli* O157, and only a few investigations have been conducted with analytical methods aiming at detecting all serotypes of VTEC.

The data presented in Figure VT3 indicate that reported levels of VTEC contamination in different foods are generally low, and overall it seems that the level of VTEC contamination in foods has been relatively constant in the 2005 to 2007 period.

Figure VT3. | ***Number of food samples tested for VTEC by food category and number of VTEC positive units[1,2], 2005-2007***



Note: Data are only presented for sample size ≥25. Numbers inside the columns indicate total number of units, numbers in brackets indicate proportion of positive samples

1. Dairy products, other than cheese
2. Fresh meat

In recent years, a number of VTEC O157 international outbreaks have been attributed to vegetables, however according to data reported by MSs, VTEC O157 is not common in this type of food. In a large study from the Netherlands, 1,852 samples of pre-cut vegetables were sampled at retail level and all were negative for VTEC. Further, Italy, Slovenia and Spain did not detect any VTEC positive samples in their smaller investigations on vegetables.

Table VT5 contains the reported VTEC findings in fresh bovine meat at different stages of production in 2007. Bovine meat is commonly perceived to be a major source of food-borne VTEC infections for humans. The data were provided by 13 MSs, of which seven reported findings of VTEC. Overall 14,115 samples were investigated of which 0.3% was VTEC positive and 0.1% VTEC O157 positive. The prevalence of VTEC ranged from 0% to 2.9% and the prevalence of VTEC O157 ranged from 0% to 1.6% in reporting MSs. Besides O157, the following serogroups were isolated from fresh bovine meat: O26, O103, O111, and O113. These serogroups are all frequently isolated from human patients with VTEC infections.

Table VT5. | ***VTEC in fresh bovine meat[1], 2007***

Country	Description	No.	VTEC		VTEC O157		Comment
			Pos	% Pos	Pos	% Pos	
At slaughter, cutting/processing plant							
Belgium	fresh	286	0		0		
	fresh	1,611	6	0.4	4	0.2	Swab samples 1600 cm^2. O157 (4) and unspecified (2)
Bulgaria	fresh	148	0		0		
	minced meat	1,529	4	0.3	0		Intended to be eaten raw
Czech Republic	fresh	536	0		0		
France	minced meat	3,605	11	0.3	5	0.1	Intended to be eaten raw O157 (5), O103 (3), O26 (2) and O111 (1)
Hungary	fresh	144	0		0		
Romania	minced meat	58	0		0		Intended to be eaten raw
	fresh	1,890	0		0		
Slovenia	fresh	164	0		0		
Spain	fresh	57	1	1.8	1	1.8	
	fresh	144	0		0		
At retail							
Belgium	minced meat	152	0		0		Intended to be eaten raw
Germany	fresh	111	3	2.7	0		Serotype not specified
	minced meat	347	8	2.3	0		Intended to be eaten raw. O113 (1) and unspecified (7)
Ireland	minced meat	38	0		0		
Netherlands	fresh	271	0		0		
	minced meat	340	0		0		
	minced meat	921	1	0.1	1	0.1	Intended to be eaten raw
Slovenia	fresh	385	4	1.0	0		
Spain	fresh	69	1	1.4	0		Serotype not specified
Level of sampling not specified							
Germany		142	4	2.8	0		Serotype not specified
Hungary	minced meat	97	0		0		Intended to be eaten cooked
Italy		55	0		0		
	minced meat	129	0		0		Intended to be eaten cooked
	minced meat	391	0		0		Intended to be eaten raw
	fresh	448	0		0		
Slovakia	minced meat	47	0		0		
Total (13 MSs)		**14,115**	**43**	**0.30**	**11**	**0.1**	

1. Data are only presented for sample size ≥25

Data from bovine animals in 2007 are presented in Table VT6. The majority of data from cattle was obtained by investigating faecal samples from single animals. Most animals were sampled at the slaughterhouse. The average VTEC prevalence was 3.7% in reporting MSs and the proportion of VTEC O157 positive animals was 3.0%. The reported occurrence of VTEC ranged from 0% to 22.1%. The highest proportion of VTEC positive animals was reported by Luxembourg, and all isolated VTEC strains from this survey was of serogroup O157. The findings of VTEC in bovine animals are substantially higher than the findings in meat of bovine origin. Besides serogroups O157, there are only limited data available concerning the serogroups/types in cattle.

Several MSs also reported data in animals other than cattle. At EU level, the highest reported proportions of VTEC positive sheep and goats were 1.4% and 4.2%, respectively. VTEC O157 was not recovered from sheep and goats. Germany reported a VTEC O157 prevalence of 0.1% in pigs.

Table VT6. | ***VTEC in cattle[1], 2007***

Country	Unit	No.	VTEC		VTEC O157		Comment
			Pos	% Pos	Pos	% Pos	
Calves							
Austria	Animal	44	1	2.3	0		O150
Denmark	Animal	186	14	7.5	14	7.5	
Germany	Animal	371	0		0		
Netherlands	Holding	174	23	13.2	23	13.2	
Dairy cows							
Estonia	Animal	162	0		0		
Germany	Animal	728	0		0		
Netherlands	Holding	157	6	3.8	6	3.8	
Meat production animals							
Lithuania	Animal	96	0		0		
Spain	Animal	312	53	17.0	53	17.0	
Not specified							
Finland	Animal	1,534	19	1.2	19	1.2	O157
Germany	Animal	1,204	33	2.7	0		O91 (4) and unspecified (29)
Italy	Animal	27	3	11.1	1	3.7	O157 (1) and unspecified (2)
Italy	Herd	228	16	7.0	6	2.6	O157 (6) and unspecified (10)
Luxembourg	Animal	240	53	22.1	53	22.1	
Portugal	Animal	52	0		0		
Slovenia	Animal	198	12	6.1	12	6.1	
Total (12 MSs)	**Animal**	**5,154**	**188**	**3.6**	**152**	**2.9**	
	Herd/Holding	**559**	**45**	**8.1**	**35**	**6.3**	

1. Data are only presented for sample size ≥25

3.7.3 Discussion

The set of MSs reporting information on VTEC infections in humans seems to vary over the years and some MSs do not have a national surveillance system for VTEC infections. This instability in data reporting makes it difficult to analyse trends both in notification rates and the most common VTEC serogroups in humans at EU level. A more harmonised dataset would enable better evaluation of the overall situation regarding the importance of VTEC as a zoonotic disease in the Community.

Most data from food and animals specify only the VTEC O157 serogroup. For the other serogroups, it is characteristic that the amount of information on VTEC monitoring in food and animals provided by reporting countries is relatively sparse. Therefore, it is difficult to assess the potential human health risk of the presence of VTEC in animals and food based on the data available. In order to improve the quality of the data from VTEC monitoring, the EU and EFSA's Task Force on Zoonoses Data Collection have undertaken the task of developing guidelines and technical specifications for monitoring and reporting VTEC in animals and food. This is done in light of recent scientific opinion from EFSA's Biological Hazards panel on the monitoring of verotoxigenic *Escherichia coli* (VTEC) and the identification of human pathogenic VTEC types (http://www.efsa.europa.eu/EFSA/efsa_locale-1178620753812_1178659395877.htm).

Yersinia | 3.8.

The bacterial genus *Yersinia* comprises three main species that are known to cause human infections: *Yersinia enterocolitica*, *Y. pseudotuberculosis* and *Y. pestis* (plague). The last major human outbreak of *Y. pestis* in Europe was in 1720, and today it is believed to no longer exist in Europe. *Y. pseudotuberculosis* and specific types of *Y. enterocolitica* cause food-borne enteric infections in humans. This chapter deals only with *Y. enterocolitica* and *Y. pseudotuberculosis* infections.

Yersiniosis caused by *Y. enterocolitica* most often causes diarrhoea, at times bloody, and occurs mostly in young children. Symptoms typically develop four to seven days after exposure and may last for one to three weeks (or longer). In older children and adults, right-sided abdominal pain and fever may be the predominant symptoms and is therefore often confused with appendicitis. Complications such as a rash, joint pain and/or bacteraemia can occur. Infection is most often acquired by eating contaminated food, particularly raw or undercooked pig meat. The ability of the organism to grow at +4°C makes refrigerated food with a relatively long shelf life a probable source of infection. Drinking contaminated unpasteurised milk or untreated water can also transmit the organism. On rare occasions, transmission may occur by direct contact with infected animals or humans.

Yersiniosis caused by *Y. pseudotuberculosis* shows many similarities with the disease pattern of *Y. enterocolitica*. Infections are caused by the ingestion of the bacteria from raw vegetables, fruit or other foodstuffs via water or direct contact with infected animals.

Pigs have been considered to be the primary reservoir for the human pathogenic types of *Y. enterocolitica*. however other animal species, e.g. cattle, sheep, deer, small rodents, cats and dogs may also carry pathogenic serotypes. Clinical disease in animals is uncommon.

Y. enterocolitica is closely related to a large array of *Yersinia* spp. without any reported public health significance. Within *Y. enterocolitica*, the majority of isolates from food and environmental sources are non-pathogenic types. It is, therefore, crucial that investigations discriminate between which strains are pathogenic for humans. Biotyping of the isolates is essential to determine whether or not isolates are pathogenic to humans, and this method is ideally complimented by serotyping. Pathogenicity can also be determined by PCR methods. In Europe, the majority of human pathogenic *Y. enterocolitica* belong to biotype 4 (serotype O:3) or less commonly biotype 2 (serotype O:9).

In 2007, an overview of reported data is given in tables and figures, however in-depth analyses will only be carried out in the Community Summary Report every two to three years depending on relevance and availability of data. Additional information on the data provided by MSs on *Yersinia* in 2007 is presented in Level 3 tables.

Table YE1 presents the countries reporting *Yersinia* data for 2007.

Table YE1. | ***Overview of countries reporting data on* Yersinia *spp., 2007***

Data	Total number of MSs reporting	Countries
Human	21	**All MSs** except FR, GR, IT, NL, PT, RO **Non-MS:** NO
Food	9	**MSs:** AT, BE, EE, FI, DE, IT, SK, SI, ES
Animal	12	**MSs:** AT, EE, ES, FI, DE, IE, IT, LV, LT, NL, PL, SK

Note: In the following chapter, only countries reporting 25 samples or more have been included for analyses

3.8.1 | Yersiniosis in humans

A total of 8,792 confirmed cases of yersiniosis were reported in the EU in 2007. The number of reported yersiniosis cases in humans has been decreasing since 2003. The notification rate however, is slightly higher in 2007 (2.8 / 100,000 population) than the previous year (2.1 / 100,000 population).

Yersinia enterocolitica was the most common species reported in human cases by MSs and was isolated from 93.8% of all confirmed cases. *Y. pseudotuberculosis* only represented 0.7% of all isolates, while the remaining 5.5% were other species, not further speciated or unknown (N = 8,784).

Table YE2. | ***Reported cases of yersiniosis in humans in 2003-2007, confirmed cases and notification rates in 2007[1]***

Country	2007				2006	2005	2004	2003
	Report Type[2]	Cases	Confirmed Cases	Cases/ 100,000				
Austria	C	142	142	1.7	158	143	110	58
Belgium	C	248	248	2.3	264	303	326	338
Bulgaria[3]	A	8	8	0.1	5			
Cyprus	U	0	0	0				
Czech Republic	C	576	576	5.6	534	498	498	372
Denmark	C	274	274	5.0	215	241	227	243
Estonia	C	76	76	5.7	42	31	15	31
Finland	C	480	480	9.1	795	638	686	646
France	–	–	–		0	171	249	218
Germany	C	4,987	4,987	6.1	5,161	5,624	6,182	6,571
Greece	–[4]	–	–			0	39	1
Hungary	C	55	55	0.5	38	41	68	-
Ireland	C	6	6	0.1	1	3	6	6
Italy	–[4]	–	–		0		0	0
Latvia	C	41	41	1.8	92	51	25	28
Lithuania	A	569	569	16.8	411	501	470	273
Luxembourg	C	11	11	2.3	5	1	-	-
Malta	U	0	0	0		0		
Netherlands	–[4]	–	–					
Poland	C	182	182	0.5	110	132	84	-
Portugal	–[4]	–	–				3	6
Romania[3]	–[4]	–	–					
Slovakia	C	74	71	1.3	82	63	78	-
Slovenia	C	32	32	1.6	80	0	38	69
Spain	C	381	381	0.9	375	318	231	417
Sweden	C	567	567	6.2	558	684	804	714
United Kingdom	C	86	86	0.1	58	65	74	95
EU Totals		**8,795**	**8,792**	**2.8**	**8,984**	**9,508**	**10,213**	**10,086**
Iceland	–[4]	–	–					
Liechtenstein	–[4]	–	–					
Norway	C	71	71	1.5	86	125		

1. Number of confirmed cases for 2005-2007 and number of total cases for 2003-2004
2. A: aggregated data report; C: case-based report; –: no report; U: unspecified
3. EU membership began in 2007
4. No surveillance system exists

3.8.2 | *Yersinia enterocolitica* in food and animals

The results from the most important food and animal sources for *Yersinia* infection in humans are presented in Tables YE3 and YE4. These are assumed to be pigs, pig meat and products thereof. As in previous years, *Y. enterocolitica* was detected both from pig meat and pigs by some MSs. A few MSs also reported isolation of *Y. enterocolitica* serotypes recognised as pathogenic for humans.

Table YE3. | ***Y. enterocolitica* in pig meat and products thereof, 2007**

Country	Description	Sample size	N	Pos	% Pos	Human pathogenic serotypes
Sampled at slaughter						
Spain	Fresh	25 g	48	3	6.3	ND[4]
Level of sampling not stated						
Germany[1]	Fresh	25 g	43	4	9.3	1 (O:5); 4 ND
	Meat products	25 g	119	0	0	-
	Minced meat	25 g	25	0	0	-
Italy[2]	Fresh	25 g[3]	26	0	0	-
	Fresh	25 g	212	2	0.9	ND
	Minced meat	25 g	242	0	0	-
	Meat preparation, intended to be eaten cooked	25 g	52	0	0	-
	Meat products, RTE	25 g	54	1	1.9	ND
	Meat products	25 g[3]	164	1	0.6	ND
	Meat products	25 g	95	0	0	-
Slovenia	Fresh	25 g	385	19	4.9	ND
Total (4 MSs)			**1,465**	**30**	**2.0**	

Note: Data are only presented for sample size >25

1. In Germany, all isolated strains were biotype 1A; only one isolate was serotyped
2. In Italy, all data are from monitoring or surveillance
3. In Italy, batch sampling
4. No data

Table YE4. | ***Y. enterocolitica* in pigs, animal-based data, 2007**

Country	N	Yersinia spp.	Y. enterocolitica (All serotypes)	Human pathogenic serotypes
		% Pos	% Pos	Pos
Pigs				
Finland[1]	104	11.0	11.0	11 (O:3)
Finland[2]	256	52.0	52.0	133 (O:3)
Germany	6,079	0.6	0.6	20 (O:9), 7 (O:3), 7 ND
Ireland	418	0	0	-
Netherlands	899	0	0	-
Spain[3]	114	19.3	19.3	ND

Note: Data are only presented for sample size >25

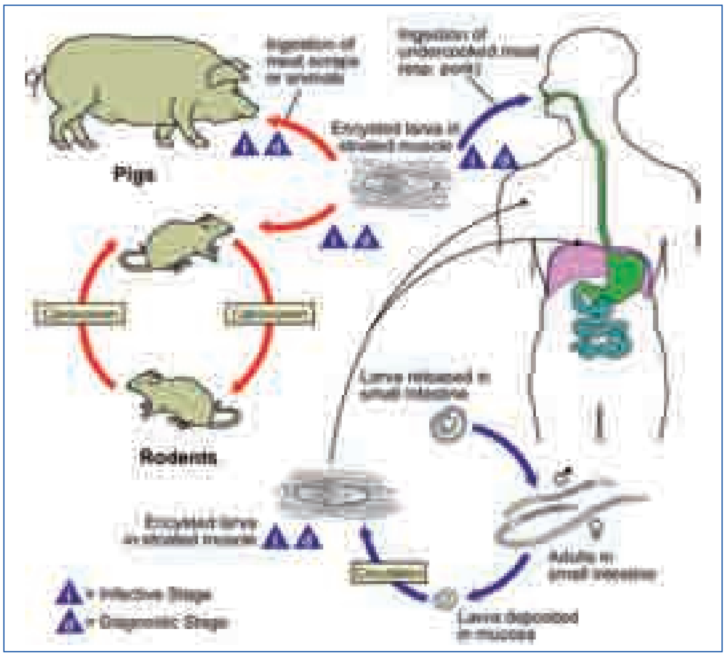
1. 11/104 intestinal samples positive for *Y. enterocolitica* O:3, biotype 4
2. 133/256 tonsil samples positive for *Y. enterocolitica* O:3, biotype 4
3. Slaughter batch based data

For additional information refer to Level 3 tables.

Trichinella | 3.9.

Trichinellosis is a zoonotic disease caused by parasitic nematodes of the genus *Trichinella*. The parasite has a wide range of host species, mostly mammals. *Trichinella* spp. undergo all stages of the life cycle, from larva to adult, in the body of a single host (Figure TR1).

Figure TR1. | ***Lifecycle of* Trichinella**



Source: http://www.dpd.cdc.gov/dpdx

In Europe, trichinellosis has been described as an emerging and/or re-emerging disease during the past decades. Worldwide, eight species and three genotypes have been described: *T. spiralis*, *T. nativa*, *T. britovi*, *T. murelli*, *T. nelsoni*, *T. pseudospiralis*, *T. papuae* and *T. zimbabwensis*, *Trichinella* T6, Tricninella T8 and *Trichinella* T9. The majority of human infections in Europe are caused by *T. spiralis*, *T. britovi* and *T. nativa*, while a few cases caused by *T. pseudospiralis* and *T. murelli* have been described as well.

Humans typically acquire the infection by eating raw or inadequately cooked meat contaminated with infectious larvae. The most common sources of human infection are pig meat, wild boar meat and other game meat. Horse, dog and many other animal meats have also transmitted the infection. Horse meat was identified as the source of infection in a number of human outbreaks recorded in the EU from the mid-1970s until 2005, including some of the largest outbreaks recorded in decades. Freezing of the meat minimizes the infectivity of the parasite, even though some *Trichinella* species/genotypes (*T. nativa*, *T. britovi* and *Trichinella* genotype T6) have demonstrated resistance to freezing in game meats.

The clinical signs of acute trichinellosis in humans are characterised by two phases. The first phase of trichinellosis symptoms may include nausea, diarrhoea, vomiting, fatigue, fever and abdominal discomfort. However, this phase is often asymptomatic. Thereafter, a second phase of symptoms including muscle pains, headaches, fevers, eye swelling, aching joints, chills, cough, itchy skin, diarrhoea or constipation may follow. In more severe cases, difficulties with coordinating movements as well as heart and breathing problems may occur. A small proportion of cases die from trichinellosis infection.

An overview of the data reported in 2007 is presented in the following tables and figures. In-depth analyses will be presented in the report every two to three years depending on relevance and available data. Additional data provided on *Trichinella* is presented in Level 3.

Table TR1. | ***Overview of countries reporting data on* Trichinella *spp., 2007***

Data	Total number of MSs reporting	Countries
Human	24	**All MSs** except DK, LU, SI **Non-MS:** NO
Animal	25	**All MSs** except CY, LT **Non-MSs:** NO, CH

3.9.1 | Trichinellosis in humans

The number of reported trichinellosis cases in humans is presented in Table TR2. In 2007, 779 confirmed cases of trichinellosis were reported by MSs. The highest number of cases were recorded in Bulgaria, Poland and Romania. Bulgaria and Romania became EU MSs in 2007, thus their contribution has resulted in a higher number of recorded cases of trichinellosis compared to previous years.

In 2007, *Trichinella spiralis* was the most commonly reported species in humans as it was detected in 28.1% of all confirmed cases. In 69.1% of confirmed human cases the *Trichinella* species was not reported and in 2.7% of cases, species other than *T. spiralis*, *T. nativa* and *T. pseudospiralis* were detected. In 2007, no cases due to *T. nativa* or *T. pseudospiralis* were reported (n = 709).

Table TR2. | ***Reported cases of trichinellosis in humans 2003-2007, and notification rate for confirmed cases, 2007[1]***

Country	2007				2006	2005	2004	2003
	Report Type[2]	Cases	Confirmed Cases (Imported)	Confirmed cases per 100,000	Confirmed cases: Total (Imported)		Cases: Total (Imported)	
Austria	U	0	0	0	0	0	0	3
Belgium	A	3	3	<0.1	-	-	-	-
Bulgaria[3]	A	70	62	0.8	180	-	-	-
Cyprus	U	0	0	0		0	0	-
Czech Republic	U	0	0	0	-	0	0	-
Denmark	–[4]	–	–		-	-	9 (9)	0
Estonia	U	0	0	0	0	1	0	-
Finland	U	0	0	0	-	0	0	0
France	C	1	1 (1)	<0.1	12	20 (20)	3 (3)	6
Germany	C	10	10 (7)	<0.1	22 (1)	0	5 (4)	3 (3)
Greece	U	0	0	0	-	-	0	0
Hungary	C	2	2 (2)	<0.1	-	0	0	-
Ireland	C	2	2 (2)	<0.1	0	0	0	0
Italy	C	0	0	0.0	-	-	0	0
Latvia	C	4	4	0.2	11	62	24	22
Lithuania	A	13	8	0.2	20	13	22	19
Luxembourg	–	–	–	-	-	0	-	-
Malta	U	0	0	0	-	0	-	-
Netherlands	U	0	0	0	-	0	0	5 (4)
Poland	C	292	217	0.6	89	70	163	40
Portugal	U	0	0	0	0	0	0	0
Romania[3]	A	432	432	2	350	-	-	-
Slovakia	C	8	8	0.1	5	0	1	1
Slovenia	-	-	-	-	1	-	0	-
Spain	C	29	29	0.1	18	9 (3)	33 (1)	39
Sweden	C	1	1	<0.1	-	0	1 (1)	0
United Kingdom	U	0	0	0	0	0	0	0
EU Total		**867**	**779 (12)**	**0.2**	**708 (1)**	**175 (23)**	**261 (18)**	**138 (7)**
Iceland	–[4]	-	-	-	-	0	-	-
Liechtenstein	–[4]	-	-	-	-	-	-	-
Norway	U	0	0	0	-	0	0	0

1. Number of confirmed cases for 2005-2007 and number of total cases for 2003-2004
2. A: aggregated data report; C: case based report; –: no report; U: unspecified
3. EU membership began in 2007
4. No surveillance system exists

3.9.2 | *Trichinella* in animals

Findings of *Trichinella* in animals are presented in Tables TR3-TR4 and Figure TR2. The results are given for the most important animal species that serve as sources or reservoirs of human trichinellosis cases in MSs. In most MSs slaughter pigs, horses, wild boar and other wildlife intended for human consumption are tested for *Trichinella* at meat inspection. The highest number of *Trichinella*-positive slaughter pigs was reported by Poland, Romania and Spain. *Trichinella* was detected more often in farmed or non-farmed wild boar than in slaughter pigs. Several MSs provided information on *Trichinella* in wildlife; Austria and the Czech Republic reported analyses of fox samples in connection with a monitoring programme established for rabies in foxes.

Denmark is the first region in the EU where the risk of* Trichinella *in domestic pigs is recognised as negligible

In 2007, Denmark was assigned the status as a region where the risk of Trichinella *in domestic pigs is officially recognised as negligible in accordance with Regulation (EC) No 2075/2005. This is the first time this status has been granted to any MS.*

As a result of this status the future monitoring programme for Trichinella *can be risk-based, which means that slaughter pigs reared under controlled housing conditions in integrated production does not have to be tested for* Trichinella *at meat inspection. All other categories of pigs and other domestic or game animal species that may become infected with* Trichinella *will still be examined for* Trichinella *using the methods laid down in the Regulation. Furthermore, pig meat exported to third countries will be tested for* Trichinella *unless the importing country accepts the new monitoring programme.*

In addition, a monitoring programme for Trichinella *in wildlife will be initiated from 2008; and 300 foxes and 50 other carnivores will be examined annually.*

Table TR3. | **Trichinella *in animals, 2003-2007***

Country	2007		2006		2005		2004		2003	
	Pigs	Wildlife	Pigs	Wildlife	Pigs	Wildlife	Pigs	Wildlife	Pigs	Wildlife
Austria	0	-	0	-	0	0	0	0	0	+
Belgium	0	+	0	0	0	0	0	+	0	-
Bulgaria	+	+	+	+						
Cyprus	-	-	-	-	-	0	0	-	0	0
Czech Republic	0	0	0	+	0	0	0	0		
Denmark	0	-	0	-	0	0	0	-	0	0
Estonia	0	+	0	+	0	+	0	+	-	-
Finland	0	+	0	+	0	+	+	+	+	+
France	+	+	0	+	0	0	+[1]	+	0	+
Germany	0	+	-	+	-	+	-	+	-	+
Greece	0	-	0	0	0	-	0	0	0	0
Hungary	0	-	0	+	-	-	0	+		
Ireland	0	-	0	-	0	-	0	0	0	-
Italy	0	+	+	+	+	0	0	0	0	+
Latvia	0	+	0	+	0	+	0	+	+	+
Lithuania	-	-	0	+	+	+	+	+	+	+
Luxembourg	0	0	0	0	0	0	0	0	0	0
Malta	0	-	-	-	0	-	0	-	-	-
Netherlands	0	0	0	0	+[2]	+[2]	0	+[2]	0	+[2]
Poland	+	+	+	+	+	+	+	+	-	-
Portugal	0	0	0	0	0	-	0	0	0	-
Romania	+	+	+	+						
Slovakia	0	+	0	+	0	+	+	+	0	-
Slovenia	0	+	0	+	0	0	0	+	0	-
Spain	+	+	+	+	+	+	+	+	+	+
Sweden	0	+	0	+	0	+	0	+	0	+
United Kingdom	0	+	0	0	0	0	0	0	-	0
Norway	0	0	0	0	0	0	0	0	0	+
Switzerland	0	0	0	0	0	0	-	-	-	-

+: *Trichinella* detected; -: No data reported; 0: *Trichinella* not detected
Blank: MSs were not EU members at the time and therefore reported no data. LT, LV, SK and SI reported on a voluntary basis in 2003. BG and RO reported on a voluntary basis in 2006
1. In France, Corsican outdoor pigs
2. In the Netherlands, positive cases refer to serology testing results; only in 2004 one positive sample was recorded using the digestion method

Figure TR2. | ***Findings of* Trichinella *in wildlife, 2007***

Note: All data reported from wildlife are from sampling based on suspicion or other convenience type sampling, except for Austria, the Czech Republic, Slovenia and the United Kingdom that analyse foxes for *Trichinella* in connection with a monitoring programme concerning rabies in foxes

All reported data from the following species are included: badgers, bears, deer, foxes, lynx, marten, minks, moose, mouflons, otter, racoon, rodents, wild boar (not farmed), wolverine and wolves

A graduate colour ramp with class interval of 0.1 was used for the map symbology

Table TR4. | ***Proportion of* Trichinella *positive animal samples, 2007***

Country	Pigs		Wild boar - farmed		Wild boar - non-farmed		Bears	
	N	% pos	N	% pos	N	% pos	N	% pos
Austria	5,521,439	0	-	-	-	-	-	-
Belgium	11,512,404	0	-	-	13,713	<0.1	-	-
Bulgaria	57,388	<0.1	1,450	1.7	563	0.4	1	0
Czech Republic	3,955,887	0	-	-	71,525	0.0	-	-
Denmark	21,391,000	0	-	-	-	-	-	-
Estonia	452,170	0	-	-	2,717	0.4	46	17.4
Finland	4,904,447	0	382	0	21	4.8	62	3.2
France	526,362	<0.1	1,364	0	22,775	0.0		
Germany	53,310,844	0	-	-	134,757	<0.1	-	-
Greece	351,036	0	1,236	0	-	-	-	-
Hungary	4,745,000	0	-	-	-	-	-	-
Ireland	2,526,483	0	-	-	-	-	-	-
Italy[1]	8,802,675	0	1,892	0	19,421	<0.1	-	-
Latvia	504,680	0	-	-	1,546	1.0	-	-
Luxembourg	2,387	0	-	-	544	0	-	-
Malta	6,162	0	-	-	-	-	-	-
Netherlands[2]	14,766,589	0	-	-	881	0	-	-
Poland	36,921,307	<0.1	-	-	86,146	0.3	-	-
Portugal	52,941	0	291	0	450	0	-	-
Romania	4,381,214	<0.1	-	-	4,371	0.7	63	12.7
Slovakia	1,063,448	0	-	-	11,978	<0.1	17	0
Slovenia	425,323	0	-	-	1,196	0	56	0
Spain	41,273,693	<0.1	-	-	51,718	0.2	-	-
Sweden[3]	3,015,991	0	-	-	17,545	<0.1	158	0
United Kingdom	209,488	0	-	-	2,023	0	-	-
EU Total	**220,680,358**	**<0.1**	**6,615**	**0.4**	**443,890**	**0.1**	**403**	**4.5**
Norway	1,470,100	0	-	-	-	-	-	-
Switzerland[4]	2,418,732	0	-	-	2,475	0	-	-

1. In Italy, an additional 24 wild boar with no information on their farmed/non-farmed status were examined. All were negative
2. In the Netherlands, an additional 449 non-farmed wild boar were examined using a serological method. All were negative
3. In Sweden, data reported from wild boar - non-farmed - include both farmed and non-farmed animals
4. In Switzerland, wild boar - non-farmed - include a small number of foxes, lynx and badgers

Table TR4. | ***Proportion of* Trichinella *positive animal samples, 2007 (contd.)***

Foxes		Lynx		Raccoon dogs		Wolves		Other wildlife	
N	% pos	N	% pos	N	% pos	N	% pos	N	% pos
-	-	-	-	-	-	-	-	-	-
62	0	-	-	-	-	-	-	35	0
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	10	50.0	-	-	-	-	-	-
264	13.3	86	36.0	216	19.9	29	37.9	21	0
9	44.4	-	-	-	-	-	-	143	0
3,344	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
252	0	-	-	-	-	-	-	570	0
-	-	2	50.0	-	-	-	-	-	-
23	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	17	0
-	-	-	-	-	-	6	0	-	-
-	-	-	-	-	-	-	-	-	-
601	20.5	-	-	2	0	2	0	8	0
1,288	0.5	-	-	-	-	-	-	-	-
22	4.5	-	-	-	-	-	-	95,252	0
215	0	126	5.6	4	0	18	5.6	30	0
600	0.2	-	-	-	-	-	-	-	-
6,680	**2.6**	**224**	**19.6**	**222**	**19.4**	**55**	**21.8**	**96,076**	**0**
-	-	-	-	1	0	-	-	-	-
-	-	-	-	-	-	-	-	-	-

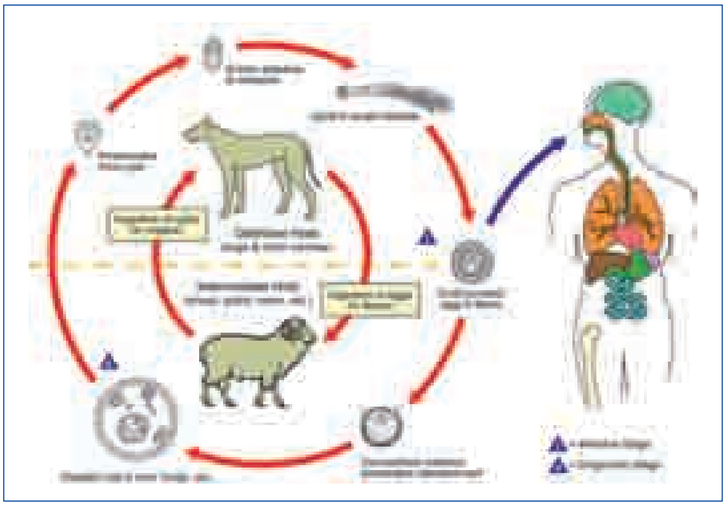
Echinococcus | 3.10.

Human echinococcosis (also known as hydatid disease) is caused by the larval stages of the small tapeworms of the genus *Echinococcus*. In Europe, this disease is caused by two of the six recognised species, namely *E. granulosus* and *E. multilocularis*. The disease caused by the two species is also known as 'cystic hydatid disease' and 'alveolar hydatid disease', respectively.

The adult stage of the tapeworm *E. granulosus* lives in the small intestines of dogs and, rarely, of other canids e.g. wolves and jackals, which are the definitive hosts. The adult parasite releases eggs that are passed in the faeces. Sheep, goats, cattle and reindeer are the intermediate hosts in which ingested eggs hatch and release the larval stage (oncosphere) of the parasite. The larvae may enter the bloodstream and migrate into various organs, especially the liver and lungs, where they develop into hydatid cysts. The definitive hosts become infected by ingestion of the cyst-containing organs of the infected intermediate hosts.

Humans are a dead-end host and may become infected through accidental ingestion of the eggs, shed in the faeces of infected dogs or other canids. In humans, the eggs also hatch in the digestive tract releasing oncospheres which may enter the bloodstream and migrate to the liver, lungs and other tissues to develop into hydatid cysts. These cysts may develop unnoticed over many years, and may ultimately rupture (Figure EH1). Clinical symptoms and signs of the disease (cystic echinococcosis) depend on the location of the cysts and are often similar to those induced by slow growing tumours.

Figure EH1. | ***Lifecycle of* E. granulosus**



Source: http://www.dpd.cdc.gov/dpdx

E. multilocularis has a similar life cycle as *E.* granulosus. The definitive hosts are foxes, raccoon dogs and to a lesser extent dogs, cats, coyotes and wolves. Small rodents and voles are the intermediate hosts. The larvae form of the parasite remains indefinitely in the proliferative stage in the liver, thus invading the surrounding tissues. In accidental cases, humans may also acquire *E.* multilocularis infection by ingesting eggs shed by the definitive host via e.g. contaminated vegetables, berries or when touching animals with infective eggs in the fur. *E.* multilocularis is the causative agent of the highly pathogenic alveolar echinococcosis in man. Although a rare human disease, alveolar echinococcosis is a chronic cancer-like disease of considerable public health importance since it is fatal in up to 100% of untreated patients.

An overview of the data reported in 2007 is presented in the following tables and figures. In-depth analyses will be presented in the report every two to three years depending on relevance and available data. Additional information on data provided by MSs on *Echinococcus* spp. in 2007 is presented in Level 3.

Table EH1. | ***Overview of countries reporting data on* Echinococcus *spp., 2007***

Data	Total number of MS reporting	Countries
Human	21	**All MSs** except CZ, DK, FR, IT, LU, RO **Non-MSs:** LI, NO
Animal	21	**All MSs** except AT, BE, CY, HU,IE, MT **Non-MS:** NO

3.10.1 | Echinococcosis in humans

The number of reported human cases of echinococcosis (including both cystic and alveolar echinococcosis) are presented in Table EH2a. In 2007, a total of 834 confirmed cases of echinococcosis were reported in the EU. The highest notification rate was reported by Bulgaria. *Echinococcus granulosus* was the most common species reported by MSs; it was isolated from 87.3% of confirmed cases, while *E. multilocularis* only represented 3.9% of all isolates. Species was not specified in 8.8% of the cases (n=829, remaining five cases without any species information submitted) (Table EHb). The geographical origin of cases is presented in Table EH3.

Table EH2a. | ***Reported cases of echinococcosis in humans, 2003-2007, and notification rate in 2007[1]***

Country	2007				2006	2005	2004	2003
	Report Type[2]	Cases	Confirmed cases	Confirmed cases per 100,000	Confirmed cases		Cases (Imported)	
Austria	A	17	17	0.2	26	9	25	34
Belgium	A	1	1	<0.1	1	0	1	–
Bulgaria[3]	A	461	461	6	543	–	–	–
Cyprus	C	4	4	0.5	6	1	0	2
Czech Republic	–	–	–	–	2	2	–	–
Denmark	–[4]	–	–	–		–	9 (9)	0
Estonia	C	2	2	0.1	0	0	0	1
Finland	C	1	1	<0.1	0	–	4	2
France	C	–	–	–	15	17	17	6
Germany	C	89	89	0.1	124	109	97	86
Greece	C	11	10	0.1	5	11	26	17
Hungary	C	8	8	0.1	6	5	11	–
Ireland	C	0	0	0	0	0	–	–
Italy	–[4]	–	–	–	0	–	–	1
Latvia	C	12	12	0.5	22	5	2	4
Lithuania	A	12	12	0.4	15	15	15	2
Luxembourg	–	–	–	–		0	–	–
Malta	U	0	0	0	0	0	–	–
Netherlands	A	11	6	<0.1	31	–	34	36
Poland	C	40	40	0.1	65	34	21	34
Portugal	C	10	10	0.1	9	9	57	10
Romania[3]	–[4]	–	–	–				
Slovakia	C	4	4	0.1	6	2	0	1
Slovenia	C	1	1	<0.1	3	0	1	1
Spain	C	125	125	0.3	98	78	6	167
Sweden	C	24	24	0.3	7	4	9	4
United Kingdom	C	7	7	<0.1	13	14	8	6
EU Total		**840**	**834**	**0.2**	**997**	**315**	**343**	**414**
Iceland	–[4]	–	–	–	–	–	–	–
Liechtenstein	U	0	0	0	–	–	–	–
Norway	U	0	0	0	0	1	0	0

1. Number of confirmed cases for 2005-2007 and number of total cases for 2003-2004
2. A: aggregated data report; C: case based report; –: No report; U: Unspecified
3. EU membership began in 2007
4. No surveillance system exists

Table EH2b. | ***Species distribution of reported confirmed echinococcosis cases in humans, 2007***

Country	*E. granulosus*	*E. multilocularis*	*E. spp*	Total
Austria	11	6	0	17
Belgium	0	1	0	1
Bulgaria	461	0	0	461
Cyprus	1	0	3	4
Estonia	0	0	2	2
Finland	1	0	0	1
Germany	58	15	16	89
Hungary	1	0	7	8
Latvia	6	0	6	12
Lithuania	9	3		12
Netherlands	10		1	11
Poland	19	6	15	40
Portugal	7	0	3	10
Slovakia	3	1	0	4
Slovenia	0	0	1	1
Spain	125	0	0	125
Sweden	5	0	19	24
United Kingdom	7	0	0	7
EU Totals	**724**	**32**	**73**	**829**

Table EH3. | ***Distribution of confirmed echinococcosis cases in humans by reporting MS and by geographical origin of cases (domestic/imported), 2007***

Country	Domestic (%)	Imported (%)	Unknown (%)	Total (no.)
Austria	41.2	58.8	0	17
Belgium	100	0	0	1
Bulgaria	0	0	100	461
Cyprus	25	75	0	4
Estonia	50	50	0	2
Finland	0	0	100	1
Germany	29.2	49.4	21.4	89
Hungary	87.5	12.5	0	8
Latvia	91.7	8.3	0	12
Lithuania	100	0	0	12
Netherlands	0	0	100	6
Poland	2.5	0	97.5	40
Portugal	0	0	100	10
Slovakia	75	25	0	4
Slovenia	0	0	100	1
Spain	100	0	0	125
Sweden	0	100	0	24
United Kingdom	0	0	100	7
Total	**23.7**	**10.3**	**66.0**	**824**

3.10.2 | *Echinococcus* in animals

Findings of *Echinococcus* in animals in 2007 are presented in Tables EH4-EH7 and Figures EH2-EH3. Tables EH7 and EH6 also include historical data. The results are presented for animal species that are considered the most important reservoir of the parasite in MSs and also for farm animals where plenty of data is available from meat inspections. The highest proportion of *Echinococcus*-positive farm animals was reported by Greece, Poland, Romania and the United Kingdom and the highest proportion of *Echinococcus*-positive foxes were recorded in France, the Czech Republic, Slovakia, Luxembourg and Germany.

Table EH4. | **Echinococcus *spp. in animals, 2005-2007***

Country	2007									2006			2005		
	Farmed[1]			Pets			Wildlife			Farmed[1]	Pets	Wildlife	Farmed[1]	Pets	Wildlife
	sp.[2]	E.g.[2]	E.m.[2]	sp.[2]	E.g.[2]	E.m.[2]	sp.[2]	E.g.[2]	E.m.[2]						
Austria	-	-	-	-	-	-	-	-	-	0	-	-	0	-	+
Belgium	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
Bulgaria	+	-	-	+	-	-	-	-	-						
Cyprus	-	-	-	-	-	-	-	-	-	-	-	-	+	0	+
Czech Republic	-	-	-	-	-	-	-	-	+	-	-	+	-	-	+
Denmark	0	0	0	-	-	-	-	-	-	0	-	-	0	-	-
Estonia	+	-	-	-	-	-	0	0	0	0	-	0	0	-	+
Finland	0	0	0	0	0	0	-	+	-	0	0	+	0	0	+
France	-	-	-	-	-	+	-	-	+	-	+	+	-	0	+
Germany	0	0	0	0	0	0	+	-	+	0	+	+	0	0	+
Greece	+	-	-	-	-	-	-	-	-	+	-	-	+	-	-
Hungary	-	-	-	-	-	-	-	-	-	+	-	-	+	-	-
Italy	+	+	+	-	-	-	0	0	0	+	-	0	+	-	-
Latvia	+	-	-	-	-	-	-	-	-	+	-	-	0	-	-
Luxembourg	-	-	-	-	-	-	-	-	+	-	-	+	-	-	+
Netherlands	-	+	-	-	-	+	-	-	+	0	-	+	-	-	+
Poland	+	-	+	-	-	-	+	-	-	+	-	-	+	0	-
Portugal	+	+	-	0	0	0	-	-	-	+	0	-	+	0	-
Romania	+	+	+	+	+	+	0	0	0	+	-	0			
Slovakia	+	-	-	0	0	0	-	-	+	0	0	0	+	0	+
Slovenia	-	+	-	-	-	-	0	0	0	+	-	0	+	-	+
Spain	+	-	-	-	-	-	+	-	-	+	-	+	+	-	+
Sweden	0	0	0	-	-	-	0	0	0	0	-	0	0	0	0
United Kingdom	+	-	-	-	-	-	+	-	-	+	-	+	+	-	-
Norway	0	0	0	-	-	-	0	0	0	0	-	+[3]	0	-	+[3]
Switzerland	-	-	-	-	-	-	-	-	-	0	+	+	+	+	+

+: *Echinococcus* detected; -: No data reported; 0: *Echinococcus* not detected
Blank: MS were not EU members at the time and therefore reported no data. RO reported on a voluntary basis in 2006
1. Farmed animals include cattle, goat, sheep, pigs and horses
2. sp.: *Echinococcus* spp.; E.g.: *E. granulosus*; E.m.: *E. multilocularis*
3. In Norway, wildlife in the archipelago of Svalbard

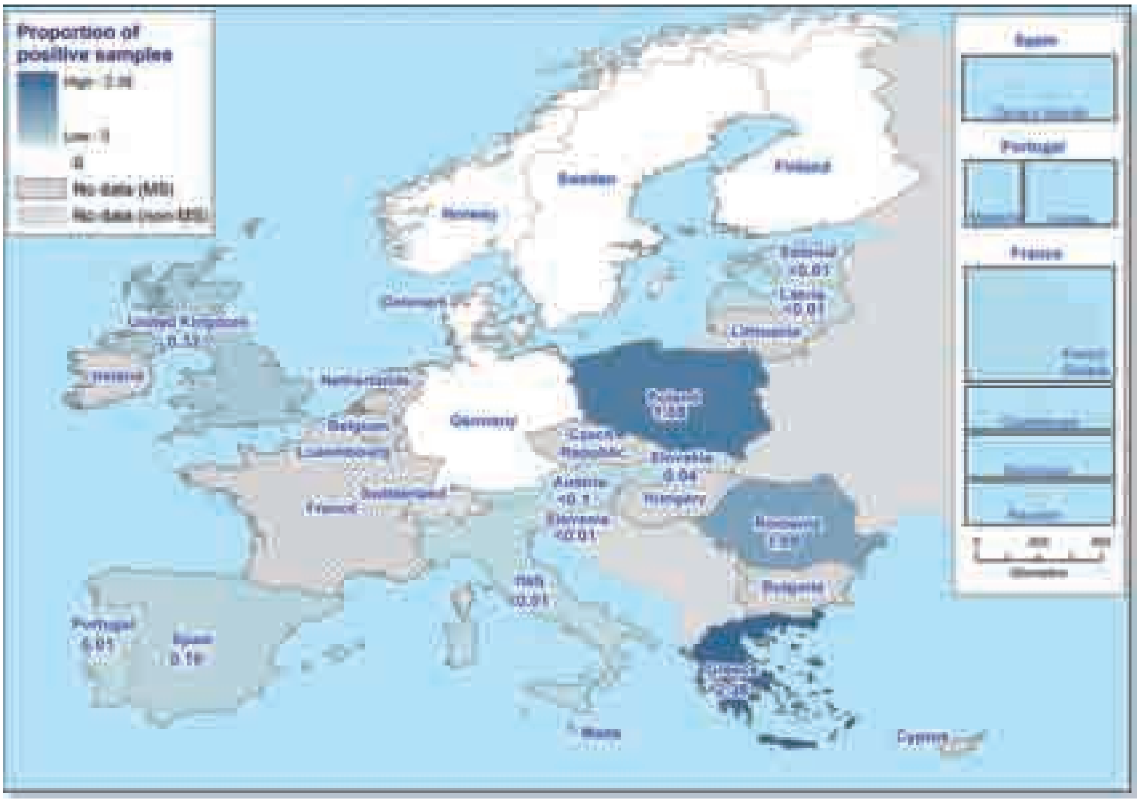
Table EH5. | ***Proportion of farm animals positive with* Echinococcus *spp., 2007***

Country	Cattle		Goats		Pigs		Sheep		Solipeds	
	No	% pos	No	% pos	No	% pos	No	% pos	No	% pos
Austria	589,365	<0.1	40,608	0	5,521,439	0	246,637	0	781	0
Denmark	511,600	0	-	-	21,391,000	0	-	-	-	-
Estonia	53,903	<0.1	16	0	452,170	0	6,191	0	12	0
Finland	291,085	0	-	-	2,452,219	0	34,476	0	975	0
Germany	500	0	1	0	543	0	660	0	9	0
Greece	314,471	1.4	747,284	1.9	1,042,330	<0.1	2,022,024	3.9	-	-
Italy[2]	1,879,815	0.4	208,714	<0.1	354,738,861	<0.1	497,965	0.3	25,638	1.3
Latvia	123,535	<0.1	-	-	504,680	<0.1	8,978	<0.1	424	0
Netherlands[1,3]	29	31.0	-	-	-	-	-	-	-	-
Poland[4]	908,806	<0.1	40	0	18,633,686	2.0	17,729	8.9	-	-
Portugal[5]	174,834	<0.1	14	7.1	1	0	32	9.4	-	-
Romania[6]	73,631	7.4	1,378	15.4	1,711,526	0.6	33,066	11.1	267	0
Slovakia	81,953	<0.1	-	-	1,063,448	<0.1	86,593	0.1	-	-
Slovenia[1]	131,963	<0.1	397	0	425,323	<0.1	10,781	0	1,504	0
Spain[7]	2,293,589	0.5	-	-	41,273,693	<0.1	15,264,161	0.6	24,314	<0.1
United Kingdom	2,255,088	0.2	-	-	8,152,129	<0.1	14,998,121	0.5	-	-
Total (16 MSs)	**9,684,167**	**0.3**	**998,452**	**1.5**	**457,363,048**	**0.1**	**33,227,414**	**0.8**	**53,924**	**0.67**
Norway	319,000	0	19,500	0	1,470,100	0	1,139,700	0	1,400	0

Note: Data are only presented for sample size ≥25

1. In the Netherlands and Slovenia, positive samples were reported as *E. granulosus*
2. In Italy 2,391 positive samples from cattle were reported as *E. granulosus* and 31 positive samples were reported as *E. multilocularis*, three positive samples from pigs were reported as *E. granulosus* and one sample was reported as *E. multilocularis*, nine positive samples from sheep reported as *E. granulosus*. An additional 49,945 animals reported as “sheep and goats”, 14 were positive
3. In the Netherlands, cattle imported from Romania
4. In Poland, 553 positive samples from pigs were reported as *E. multilocularis*
5. In Portugal, five positive samples from cattle were reported as *E. granulosus*
6. In Romania, 217 positive samples from cattle were reported as *E. granulosus* and 3,634 positive samples were reported as *E. multilocularis*, three positive samples from goats were reported as *E. multilocularis*, 455 positive samples from pigs were reported as *E. granulosus* and 5,279 samples were reported as *E. multilocularis*, 190 positive samples from sheep reported as *E. granulosus* and 2,276 samples were reported as *E. multilocularis*
7. In Spain, sheep and goats were reported together
8. In Austria, 28 imported cattle were found positive for *E. granulosus*

Figure EH2. ***Findings of* Echinococcus *spp. in farm animals, 2007***



Note: data included from cattle, goats, pigs, sheep and solipeds. All data provided are from slaughterhouse monitoring
Data from the Netherlands is not included as it refers to imported animals
A graduate colour ramp with class interval of 0.1 was used for the map symbology

Table EH6. | **Echinococcus *in foxes, 2003-2007***

Country	2007		2006		2005		2004		2003	
	No	% pos *E.m.*[1]	No	% pos *E.m.*[1]	No	% pos	No	% pos	No	% pos
Austria	-	-	-	-	19	5.3	86	8.1	807	5.6
Denmark	-	-	-	-	-	-	-	-	34	0
Czech Republic[2]	1,250	20.4	958	11.2	833	7.4				
Finland	264	0	209	0	281	-	355	0	-	-
France	941	15.7	131	23.7	172	5.8	986	7.6	-	-
Germany[3]	4,385	11.6	3,605	25.1	7,764	21.7	5,398	24.5	4,483	33.4
Luxembourg	23	13.0	23	30.4	329	21.0	35	0.0	29	27.6
Netherlands	116	9.5	49	6.1	45	6.7	-	-	171	12.9
Slovakia	570	18.1	-	-	289	37.4	490	30.2	-	-
Sweden[4]	215	0	300	0	200	0	300	0	394	0
Total (10 MSs)	**7,764**	**13.6**	**5,275**	**20.0**	**9,932**	**19.9**	**7,650**	**20.3**	**5,918**	**28.5**
Norway	483	0	-	-	-	-	-	-	-	-
Switzerland[5]	-	-	14	14.3	33	39.4				

-: No data reported
Blank: MS was not a member of EU at the time and therefore reported no data. SI reported on a voluntary basis in 2003
1. *E.m.*: *E. multilocularis*
2. In the Czech Republic in 2005, all samples were reported as *E. multilocularis*. Data is randomly collected in connection with a monitoring programme for rabies
3. In Germany in 2006, 37 samples were reported as *Echinococcus* spp.
4. In Sweden, a targeted sampling programme in foxes is running continuously
5. In Switzerland in 2006, two samples were reported as *Echinococcus* spp.

Figure EH3. | ***Findings of* E. multilocularis *in foxes, 2006-2007***

Note: All data reported were based on suspicious sampling or other convenience type sampling, except for the Czech Republic that also analyse foxes for *Echinococcus* in connection with a monitoring programme concerning rabies in foxes and Sweden that has a continuous sampling programme running
For Switzerland 2006 data was used
A graduate colour ramp with class interval of 0.1 was used for the map symbology

Table EH7. | **Echinococcus *in wildlife other than foxes, 2007***

Species	*E. granulosus*		*E. multilocularis*		*Echinococcus* spp.	
	No	Pos	No	Pos	No	Pos
Bears	-	-	-	-	11	0
Bison	-	-	-	-	11	0
Deer	-	-	-	-	181,096	11
Marten	-	-	-	-	6	0
Minks	-	-	-	-	40,356	26
Moose	-	-	-	-	681	0
Muskrats	-	-	768	28	-	-
Raccoon dogs	-	-	324	7	217	5
Reindeers	82,600	3	-	-	48,742	0
Voles	-	-	-	-	2,200	0
Wild boar	-	-	-	-	61,484	62
Wolves	-	-	-	-	30	0
Total (12 MSs)	**82,600**	**3**	**1,092**	**35**	**334,834**	**104**

Materials and methods | 4.

4.1 | Data received in 2007

Human data

All human data used in the Community Summary Report for 2007 were provided by ECDC based on data submitted to the European Surveillance System (TESSy), with the exception of human tuberculosis (TB) data, which were provided by ECDC based on data obtained from the EuroTB network.

The European Surveillance System (TESSy) is a software platform that was recently adopted by ECDC for the collection of data on infectious diseases. It was used for the first time by reporting countries for the 2006 Community Zoonoses Report. Both aggregated and case based data were reported to TESSy. Although aggregated data did not include individual case based information, both reporting formats were useful to calculate country-specific disease incidence and trends. In 2007, data were further classified into two data source types, including notification and laboratory data. Notification data were used for epidemiological analyses (e.g. incidence, age, importation status) while laboratory data were used for laboratory-specific analyses (e.g. top ten serotypes).

Data on human zoonoses cases were received from all 27 MSs and additionally from three non-MSs: NO, IS and LI. Data on three human zoonoses were provided directly to EFSA from CH.

Data on foodstuffs and animals

In 2007, data were collected on a mandatory basis for the following eight zoonotic agents: *Salmonella*, thermotolerant *Campylobacter*, *Listeria monocytogenes*, Verotoxigenic *E. coli*, *Mycobacterium bovis*, *Brucella*, *Trichinella* and *Echinococcus*. The mandatory reported data also included antimicrobial resistance in isolates of *Salmonella* and *Campylobacter*, food-borne outbreaks and susceptible animal populations. Furthermore, based on epidemiological situations in each MS, data was reported on the following agents and zoonoses: *Yersinia*, rabies, *Toxoplasma*, cysticerci, *Sarcocystis*, Q fever, psittacosis, *Leptospira* and antimicrobial resistance in indicator *E. coli* isolates. Finally, data concerning compliance with microbiological criteria were also reported for staphylococcal enterotoxin, *E.* sakazakii and histamine.

In this report, only data concerning the eight mandatory zoonotic agents, *Yersinia* and rabies is presented.

For the fourth consecutive year, countries submitted data on animals, food, feed and food-borne outbreaks using a web-based zoonoses reporting system that is maintained by EFSA.

All EU MSs submitted national zoonoses reports for the year 2007. In addition, reports were submitted by two non-MSs: CH and NO. For BG and RO, this was the first year as reporting MSs.

4.2 Statistical analysis of trends over time

Human data

EU trends in notification rates (expressed as numbers of confirmed cases per population of 100,000) were analysed using three different tests including chi-square for trend, linear regression, and poisson regression. The EU trend was reported as significant if it was found to be statistically significant using all three tests ($p<0.05$). Data (number of confirmed cases and total population) at MS level was only included in the trend analysis when the MS reported human cases throughout the period 2004 to 2007.

Due to a wide variation in the reported case counts of zoonotic infections among MSs, notification rate trends were evaluated within each MS, and for all MSs combined. When making comparisons between MSs, one should take into account such factors as the variability of case definitions, reporting requirements, surveillance systems and microbiological methods employed by reporting countries.

Changes in notification rates were visually explored for salmonellosis, campylobacteriosis and listeriosis, for each MS, by *trellis* graphics, using the *lattice* package in the R software (http://www.r-project.org). For the reporting MS specific notification rate trend graphs for salmonellosis and campylobacteriosis, a unique scale was used for countries shown in the same row, however scales differ among rows. MSs were ordered according to the maximum value of the notification rate. Moreover, in each row, countries are shown in alphabetical order. Due to more similar listeriosis notification rates across MSs, the same scale is used for trend graphs for all reporting MSs.

The notification rate for each year is calculated as the ratio between the number of confirmed cases and the total population, per 100,000 inhabitants. As with EU notification trends, MS trends were reported as significant if they were found to be statistically significant using all three tests ($p<0.05$). Analyses were conducted using StataSE 10.

Data on foodstuffs and animals

EU weighted means were estimated by weighting the MS-specific proportion of positive units with the reciprocal of the sample fraction, e.g. weighted by "The total number of units per MS per year", divided by "number of tested units in the MS per year". Because the total number of units in the population is not always available, the most reliable proxy was used. For broiler meat samples and laying hen flocks, the population was defined as the number of broilers and laying hens per MS, respectively, based on the population data reported for 2006, and supplemented for a few MSs with EUROSTAT data from 2005. For broiler flocks, the number of flocks estimated in the baseline survey 2005 to 2006 was used to define the population, whereas for cattle and small ruminants, the annually reported population data were used. Source of data for weighting is included under all figures with weighted means.

Changes in the proportions of positive tests for zoonotic agents in foodstuffs and animals during 2004 to 2007 were visually explored, for each MS, by *trellis* graphics, using the *lattice* package in the R software (http://www.r-project.org). In order to obtain yearly estimates of the ratios between positive and tested samples, for groups of examined MSs, the SURVEYMEANS procedure in the SAS System was used. The weight was applied for each observation, to take into account disproportionate sampling at MS level. Statistical significance of four-year trends was tested by a weighted logistic regression for binomial data, using the GENMODE procedure in SAS. As non-independence of observations within each MS could not be excluded, for example due to the possibility of sampling animals belonging to the same holdings, or meat samples from the same slaughterhouses, the REPEATED statement was used. This yielded inflated standard errors for the effect of the year of sampling, reducing the probability of detecting significant time trends, and corresponding to a cautious approach to statistical analyses. MSs with data from at least three years were included in the trend analysis.

4.3 Data sources

In the following sections, the types of data submitted by the reporting countries are briefly described.

4.3.1 *Salmonella* data

Humans

Salmonellosis is a notifiable disease in humans in most MSs, CH and NO, except in NL and UK (Appendix Table SA19, information missing from BG, LU, MT and RO). No information on the notification system for salmonellosis is reported to EFSA from IS and LI. In the UK, although reporting of food poisoning is mandatory, isolation and specification of the organism is voluntary. However, reporting of *Salmonella* is generally believed to be carried out by the majority of the laboratories testing for the organism in the UK. Diagnosis of human infections is generally done by culture from human stool samples.

Foodstuffs

In food, *Salmonella* is notifiable in 12 MSs (AU, BE, EE, ES, FI, FR, HU, IT, LV, SK, SI and SE) and NO (Appendix Table SA19, information missing from BG, CY, CZ, DE, DK, GR, LI, LU, MT, NL, PL, PT and RO). Commission Regulation (EC) No 2005/2073 on microbiological criteria for foodstuffs, lays down food safety criteria for *Salmonella* in several specific food categories. This regulation came into force in January 2006. Sampling schemes for monitoring *Salmonella* in foodstuffs, e.g. place of sampling, sampling frequency, and diagnostic methods, vary between MSs and food types. For a full description of monitoring schemes and diagnostic methods in individual MSs, please refer to Appendix Tables SA7, SA10, SA13, SA16 and SA17. The monitoring schemes were based on different samples, such as neck skin samples, carcass swabs, caecal contents and meat cuttings; these were collected at slaughter, processing, meat cutting plants and at retail. Several MSs reported data that were collected as part of HACCP programmes, based on sampling at critical control points. These targeted samples could not be directly compared with those that were randomly collected for monitoring purposes, and were, therefore, not included in data analysis and tables. Information on serotype distribution was not consistently provided by all MSs.

Animals

Salmonella in *Gallus gallus* and/or other animal species is notifiable in most MSs, CH and NO, except in HU (Appendix Table SA19, information missing from BG, MT and RO). In DK clinical cases are not notifiable for poultry - only other animals. Monitoring of *Salmonella* in animals is mainly conducted through passive, laboratory-based surveillance of clinical samples, active routine monitoring of flocks of breeding and production animals in different age groups, and tests on organs during meat inspection. Community Regulation (EC) No 2003/2160 prescribes a sample plan for the control of *S.* Enteritidis, *S.* Typhimurium, *S.* Infantis, *S.* Virchow and *S.* Hadar in breeding flocks of *Gallus gallus* to ensure comparability of data among MSs. Non-MSs (EFTA members) must apply the regulation as well according to the Decision of the EEA Joint Committee No 101/2006. 2007 is the first year of reporting under this Regulation. In Appendix Tables SA2 to SA4, monitoring programmes and control strategies in breeding flocks of *Gallus gallus* that are applied in different MSs, are shown. The above directive does not include requirements for monitoring and control of other commercial poultry production systems, but most MSs have national programmes for laying hens (Appendix Tables SA5 and SA6), broilers (Appendix Tables SA7 and SA8), ducks (Appendix Tables SA11 and SA13), geese (Appendix Tables SA12 and SA13) and turkeys (Appendix Tables SA9 and SA10). Some MSs also monitor *Salmonella* in pigs (Appendix Tables SA14, SA15 and SA16), cattle (Appendix Tables SA17 and SA18) and other animals.

4.3.2 *Campylobacter* data

Humans

Campylobacteriosis is notifiable in most MSs, CH and NO, except in DE and UK, (Appendix Table CA2, information missing from BG, LU, MT, PT and RO). Most MSs have had notification systems in place for many years. However, CY and IE have implemented their notification systems in recent years (2004 to 2005). No information on the notification system for campylobacteriosis is reported to EFSA from IS and LI. Diagnosis of human infections is generally done by culture from human stool samples (Appendix Table CA1). In some countries, isolation of the organism is followed by biochemical tests for speciation.

Foodstuffs

In food, *Campylobacter* is reported notifiable in ten MSs (AT, BE, CZ, EE, ES, IT, LV, NL, SK and SI) and NO (Appendix Table CA2, information missing from BG, CY, DE, FR, LT, LU, MT, PL, PT and RO), however several other MSs report data. At processing, cutting and retail, sampling was predominantly carried out on fresh meat. Food samples were collected in several different contexts, i.e. continuous monitoring or control programmes, screenings, surveys and as part of HACCP programmes implemented within the food industry (Appendix Table CA1). HACCP data are, however, not included in the report.

Animals

Campylobacter is notifiable in *Gallus gallus* in FI and NO, and in all animals in BE, EE, ES, IE, LV, LT, NL, and CH (Appendix Table CA2, information missing from BG, CY, FR, DE, MT, PL and RO). The most frequently used methods for detecting *Campylobacter* in animals at farm, slaughter and in food were bacteriological methods ISO 10272 and NMKL 119 as well as PCR methods (Appendix Table CA1). In some countries, isolation of the organism is followed by biochemical tests for speciation. For poultry sampled prior to slaughter, faecal material was collected either as cloacal swabs or sock samples (faecal material collected from the floor of poultry houses by pulling gauze over footwear and walking through the poultry house). At slaughter, several types of samples were collected, including cloacal swabs, caecal contents, and/or neck skin.

4.3.3 *Listeria* data

Humans

Listeriosis was notifiable in humans in most MSs and NO except in NL and UK (Appendix Table LI2, information missing from BG, LU and RO). No information on the notification system for listeriosis is reported to EFSA from IS and LI. Diagnosis of human infections is generally done by culture from blood, cerebral spinal fluid and vaginal swabs.

Foodstuffs

Notification of *Listeria* in food was required in 11 MSs (AT, BE, EE, ES, FR, HU, IT, LV, NL, SK and SI), however several other MSs report data (Appendix Table LI2, information missing from BG, CY, CZ, DE, DK, GR, LI, MT, PL, PT and RO). Commission Regulation (EC) No 2005/2073 on microbiological criteria for foodstuffs lays down food safety criteria for *Listeria* in ready-to-eat (RTE) foods. This regulation came into force in January 2006. National monitoring programmes and diagnostic methods for testing samples for *Listeria* are found in Appendix Table LI1. Surveillance in ready-to-eat foods was performed in most MSs. However, due to differences in sampling and analytical methods, comparisons from year-to-year and between countries were difficult.

Animals

Listeria in animals was notifiable in 12 MSs (BE, DE, EE, ES, FI, GR, LV, LT, NL, SK, SI and SE), CH and NO (Appendix Table LI2, information missing from BG, CY, IE, MT, PL and RO). Monitoring of *Listeria* in animals is mainly conducted through passive, laboratory-based surveillance of clinical samples, active routine monitoring or random national surveys.

4.3.4 Tuberculosis data

Humans

Tuberculosis in humans is notifiable in all MSs, CH and NO (Appendix Table TB1, information missing from BG, LU, MT and RO). *Mycobacterium bovis* cases of 2007 were not yet reported to the EuroTB network, so 2006 data were presented. The 2006 EuroTB data was updated by IE and PT in this report. In several of the reporting MSs, the notification system for human tuberculosis does not distinguish the tuberculosis cases caused by different species of *Mycobacterium*.

Animals

Tuberculosis in animals is notifiable in all MSs, Norway and Switzerland (Appendix Table TB1, information missing from BG, CY, MT, PL and RO). In GR and HU only bovine tuberculosis is notifiable, and in IE only ruminant animals. Rules for intra-Community bovine trade, including requirements for cattle herds and country qualification as officially free from tuberculosis are laid down in Council Directive 64/432/EC, as last amended by Commission Decision 2007/729/EC. By the end of 2007, 11 MSs (AT, BE, CZ, DE, DK, FI, FR, LU, NL, SK and SE), CH and NO were officially bovine tuberculosis-free (OTF). In IT, 15 provinces and three regions have been declared OTF. An overview of the OTF status is presented in Appendix Table TB-BR1. In 2007, eradication programmes in cattle herds in ES, IT, PL, and PT received co-financing (Commission Decision 2006/687/EC as amended by 2007/851/EC).

4.3.5 *Brucella* data

Humans

Brucellosis in humans is notifiable in almost all MSs, CH and NO, except for DK that only reports imported cases (Appendix Table BR1, information missing from BG, LU, MT and RO). No information on the notification system for brucellosis is reported to EFSA from IS and LI.

Foodstuffs

Brucellosis in food is notifiable in eight MSs (AT, BE, ES, FI, IT, NL, SI and UK) (Appendix Table BR1, information missing from BG, CY, CZ, DE, DK, FR, GR, LV, LT, LU, MT, PL, PT and RO). In 2007, presence of *Brucella* was reported from samples of milk and cheeses, and only from IT and PT. The samples were taken as part of monitoring programmes and as suspect sampling.

Animals

Brucellosis in animals is notifiable in most MSs, CH and NO, except for SK (Appendix Table BR1, information missing from BG, CY, MT and RO). In IE, only tuberculosis in ruminant animals is notifiable.

Cattle: Rules for intra-Community bovine trade, including requirements for cattle herds and country qualification as officially free from brucellosis are laid down in Council Directive 64/432/EC, as last amended by Commission Decision 2007/729/EC. By the end of 2007, 12 MSs (AT, BE, CZ, DE, DK, FI, FR, LU, NL, SI, SK and SE), CH and NO, were officially free from brucellosis in cattle (OBF). OBF regions have been declared in IT (seven regions and 20 provinces), PT (four islands of the Azores) and in the UK (Great Britain) (Appendix Table TB-BR1). In 2007, eradication programmes in cattle herds in CY, ES, IE, IT, PT and UK (Northern Ireland) received co-financing (Commission Decision 2006/687/EC as amended by 2007/851/EC).

Sheep and goats: Rules for intra-Community trade of ovine and caprine animals and country qualification as officially free from ovine and caprine brucellosis caused by *B. melitensis* (ObmF) are laid down in Council Directive 91/68/EC, as last amended by the Commission Decision 2006/104/EC. By the end of 2007, 16 MSs (AT, BE, CZ, DE, DK, FI, HU, IE, LU, NL, PL, RO, SI, SK, SE and UK), CH and NO, were officially free from ovine and caprine brucellosis caused by *B. melitensis* (ObmF). ObmF regions have been declared in ES (the Canary Islands), FR (64 departments), IT (eight regions and five provinces) and PT (the Azores) (Appendix Table TB-BR1). In 2007, eradication programmes for ovine and caprine brucellosis in CY, ES, FR, GR, IT and PT received co-financing (Commission Decision 2006/687/EC as amended by 2007/851/EC).

4.3.6 Rabies data

Humans

Rabies is notifiable in humans in all MSs, CH and NO (Appendix Table RA3, information missing from BG, LU, MT, PT and RO). No information on the notification system for rabies is reported to EFSA from IS and LI. Most countries examine human cases based on blood samples or cerebrospinal fluid. However, in case of post mortem examinations, the central nervous system is sampled. Identification is mostly based on antigen detection, isolation of virus and the mouse inoculation test (Appendix Table RA2).

Animals

In accordance with Council Directive 64/432/EC, rabies is notifiable in animals in all MSs (Appendix Table RA3, information missing from BG, IE, LU, MT and RO). In animals, most countries test samples from the central nervous system. Identification is mostly carried out using the fluorescent antibody test (FAT), which is recommended by both WHO[1] and OIE[2] and the mouse inoculation test. However, ELISA, PCR and histology are also used (Appendix, Table RA2).

BE, CH, CZ, FI, FR, IE, LU, NO (mainland) and UK have declared themselves free from rabies. CY, ES (mainland and islands), GR, MT and SE consider themselves free from rabies. See Appendix Table RA3 for more information.

4.3.7 VTEC data

Humans

In humans, VTEC infections are notifiable in most MSs and NO, except for UK. Enterohaemorrhagic *E. coli* (EHEC) is notifiable in CY, DK, EE, GR and IE. In FR, only cases with HUS are notified (Appendix Table VT1, information missing from BG, LU, MT, PT and RO). No information on the notification system for VTEC is reported to EFSA from IS and LI. Diagnosis of human gastrointestinal infections is generally done by culture from human stool samples.

Foodstuffs and animals

VTEC in food is notifiable in nine MSs (AT, BE, EE, ES, IT, LV, NL, SK and SI) and in animals in seven MSs (BE, EE, ES, FI, LT, LV and SE) (Appendix Table VT1, missing information from BG, CY, DE, DK, FR, GR, HU, LT, MT, PL, PT and RO), however several other MSs report data. Food samples were collected in a variety of settings, such as abattoirs, cutting plants, dairies, wholesalers and at retail level, and included different samples such as carcass surface swabs, cuts of meats, minced meat, milk, cheeses, and other products. The majority of investigated products were raw but intended to undergo preparation before being consumed. The samples were taken as part of official control and monitoring programmes as well as random national surveys. The number of samples collected and types of food sampled varied among individual MSs. Most of the animal samples were collected at the abattoir or the farm.

4.3.8. *Yersinia* data

Humans

Notification of yersiniosis in humans was mandatory in most MSs and NO, except in NL and UK (Appendix Table YE1, missing information from BG, GR, LU, MT, PT and RO). No information on the notification system for yersiniosis is reported to EFSA from IS and LI. Diagnosis of human gastrointestinal infections is generally done by culture from human stool samples.

Foodstuffs and animals

Yersinia in food is notifiable in eight MSs (AT, BE, EE, ES, IT, NL, SI and SK) and CH, and in animals in six MSs (BE, ES, IE, LV, LT and NL) (Appendix Table YE1, missing information from BG, CY, CZ, DE, DK, FR, GR, HU, LT, LV, MT, PT and RO). Primarily domestic animals were tested, but only results from pigs are presented in the report. Reporting of specific human pathogenic serotypes found in food and animals are often missing, and differences in sampling and analytical methods, and sensitivity, make comparison between countries difficult.

1. WHO Laboratory techniques in rabies
2. O.I.E. Manual of Diagnostic Tests and Vaccines for Terrestrial Animals

4.3.9 *Trichinella* data

Humans

Trichinella in humans is notifiable in most MSs and Norway, except in DK and UK (Appendix Table TR2, information missing from BG, LU, MT and RO). No information on the notification system for trichinellosis is reported to EFSA from IS and LI. In humans, diagnosis of *Trichinella* infections is primarily based on clinical symptoms and serology (ELISA and Western Blot). Comparatively, histopathology on muscle biopsies is rarely performed.

Foodstuffs and animals

Trichinella in foodstuffs is notifiable in most MSs and NO, except for IE (Appendix Table TR2, information missing from BG, CY, CZ, DE, DK, LV, LT, LU, MT, NL, PL and RO). *Trichinella* in animals is notifiable in most MSs, CH and NO, except for HU (Appendix Table TR2, information missing from BG, FR, IT, MT and RO).

Rules for testing for *Trichinella* in slaughtered animals are laid down by Commission Regulation (EC) No 2075/2005. In accordance with this regulation, all finisher pigs, sows, boars, horses, wild boars and some other wild species must be tested for *Trichinella* at slaughter. The regulation allows for the possibility that MSs can apply for status as a region with negligible risk of trichinellosis, and in 2007 DK was the first MS to be assigned this status. Some MSs reported using digestion and compression methods as described in Directive 77/96/EC (see Appendix Table TR1 for more information).

4.3.10 *Echinococcus* data

Humans

Echinococcosis is notifiable in humans in most MSs and NO, except for DK, NL and UK. (Appendix Table EH2, information missing from BG, LU, MT and RO). No information on the notification system for echinococcosis is reported to EFSA from Iceland and Liechtenstein.

Foodstuffs and animals

In food, *Echinococcus* is reported notifiable in ten MSs (AT, BE, EE, ES, FI, HU, IT, NL, SI and SE) and NO, and is notifiable in animals in most MSs, CH and NO, except for the CZ, FR, HU, LU and UK (Appendix Table EH2, information missing on animals from BG, CY, DE, IE, MT, PL and RO).

Guidelines for the control of the pathogen through meat inspection of animal carcasses for human consumption are provided through Council Directive 64/433/EC, whereby visual inspection of all slaughtered animals is carried out by official veterinarians examining organs and muscles intended for human consumption. Whole carcasses or organs are destroyed in cases where *Echinococcus* cysts are found. An overview of the monitoring and diagnostic methods is set out in Appendix, Table EH1.

4.4 | Terms used to describe prevalence or proportion positive values

In the report a set of standardised terms are used to describe the proportion of positive sample units or the prevalence of zoonotic agents in animals and foodstuffs:

- Rare <0.1%
- Very low 0.1% to 1%
- Low >1% to 10%
- Moderate >10% to 20%
- High >20% to 50%
- Very high >50% to 70%
- Extremely high >70%

Appendix

Appendix 1

List of Abbreviations

Abbreviation	Definition
CFU	Colonies Forming Unit
DSN	Dedicated Surveillance Networks
EBLV	European Bat *Lyssavirus*
EC	European Commission
ECDC	European Centre for Disease Prevention and Control
EEC	European Economic Community
EFSA	European Food Safety Authority
EU	European Union
EUROSTAT	Statistical Office of the European Communities
g	Gram
GHP	Good Hygiene Practice
HACCP	Hazard Analysis and Critical Control Point
HUS	Haemolytic Uraemic Syndrome
ISO	International Organization for Standardization
MS	Member State
OBF	Officially Brucellosis Free
ObmF	Officially *Brucella melitensis* Free
OTF	Officially Tuberculosis Free
RTE	Ready-to-eat
spp.	Species
TBE	Tick Borne Encephalitis
TESSy	The European Surveillance System
VTEC	Verotoxigenic *Escherichia coli*
WHO	World Health Organization
ZCC	Zoonoses Collaboration Centre

Member States of the European Union and other reporting countries in 2007

Member States of the European Union, 2007

Member State	ISO Country Abbreviations
Austria	AT
Belgium	BE
Bulgaria	BG
Cyprus	CY
Czech Republic	CZ
Denmark	DK
Estonia	EE
Finland	FI
France	FR
Germany	DE
Greece	GR
Hungary	HU
Ireland	IE
Italy	IT
Latvia	LV
Lithuania	LT
Luxembourg	LU
Malta	MT
Netherlands	NL*
Poland	PL
Portugal	PT
Slovakia	SK
Slovenia	SI
Spain	ES
Romania	RO
Sweden	SE
United Kingdom	UK*

* In text, referred to as the Netherlands and the United Kingdom

Non-Member States reporting in 2007

Country	ISO Country Abbreviations
Iceland	IS
Liechtenstein	LI
Norway	NO
Switzerland	CH

2. APPENDIX

Appendix 2

Tables

Appendix Table SA1. Surveillance systems on Salmonella *in feedingstuffs, 2007*

Country	Compulsory surveillance	Domestic raw feed material		Imported raw feed material (EU and Non-EU countries)	
		Animal	Vegetable	Animal	Vegetable
Austria	Yes	Each farm, processing plant and retailer are sampled at least twice per year		Each farm, processing plant and retailer are sampled at least twice per year	
Belgium	Yes	Official monitoring		-	-
Cyprus	-	-	-	-	-
Czech Republic	-	-	-	-	-
Denmark	Yes	Targeted sampling	Targeted sampling	Targeted sampling	Targeted sampling
Estonia	Yes	Monitoring	Monitoring	-	-
Finland	Yes	Self control systems based on requirements of legislation		Every consignment is sampled or random sampling depending on feedtype	Every consignment is sampled
-	-	-	-	Sampling frequency depends on raw feed material and it is based on risk assessment	
France	-	Official monitoring, random sampling		Official monitoring, random sampling	-
Germany	Yes	-		Samples are taken by official labs. At least 25 samples per batch	-
Greece	-	Targeted and routine sampling	Targeted and routine sampling	-	-
Hungary	-	-	-	-	-
Ireland	Yes	Compulsory sampling regime drawn up in accordance with Directive 1995/53/EC - both imported and domestic			
Italy	Yes	-	Official control as well as HACCP or own check by the industry	-	-
Latvia	Yes	Official and HACCP or own check by the industry		Targeted sampling and HACCP or own check by the industry	Targeted sampling and HACCP or own check by the industry
Lithuania	Yes	Official and self control	Official and self control	Official and self control	Official and self control
Luxembourg	-	-	-	-	-
Malta	-	-	-	-	-
Netherlands	Yes	Own control		-	-
Poland	-	-	-	-	-
Portugal	-	-	-	-	-
Slovakia	-	-	-	-	-
Slovenia	Yes	Official target sampling and own check programme based on HACCP by the industry		Official target sampling and own check programme based on HACCP by the industry	
Spain	Yes	Monitoring	Monitoring	-	-
Sweden	Yes	Targeted sampling/self control		Targeted sampling	
United Kingdom (Great Britain)	-	Sampling of rendered material is required if the rendered material is intended for use in livestock feedingstuffs; reportable		Tested according to a risk assessment	-
United Kingdom (Northern Ireland)	-	-		x	-
Norway	Yes	Own check programme based on requirements of legislation. Random sampling by the official surveillance programme		x	x
Switzerland	-	-	-	-	-

x - routinely performed

1. In Sweden, feed mills producing feedingstuffs for poultry a minimum of five samples per week, feed mills producing feedingstuffs for ruminants, pigs or horses two samples a week
2. In Norway, establishments producing feed are required to establish own check programme based on HACCP. In addition, random samples are collected through an official surveillance programme

Appendix Table SA1. Surveillance systems on Salmonella *in feedingstuffs, 2007 (contd.)*

Process control	Compound feed			Comments
	Cattle	Pig	Poultry	
x	Each farm, processing plant and retailer are sampled at least twice per year			Official sampling is carried out according to Directive 1976/371/EC. Analysis method: ISO 6579:2002
-	x	x	x	
-	-	-	-	
-	-	-	-	
Targeted sampling	-	-	-	
-	Monitoring	Monitoring	Monitoring	
x	Self control systems based on requirements of legislation. Final products: risk-based official sampling			Official sampling is carried out according to Directive 1976/371/EC. Analysis method in Evira: ISO 6579:2002 with some minor modifications
-	-	-	-	
-	Official monitoring, random sampling			
-	-	-	-	
-	-	-	ISO 6571, ISO 6581	
-	-	-	-	
-	x	x	x	
-	Official control as well as HACCP or own check by the industry			
HACCP by the industry	Official and HACCP by the industry			Official sampling is carried out according to Directive 76/371/EEC. Analysis method: ISO 6579:2002
Official and self control	Official and self control	Official and self control	Official and self control	Analysis method: LST EN ISO 6579:2003 lt
-	-	-	-	
-	-	-	-	
-	Routine testing	-	-	
-	-	-	-	
-	-			
-	-	-	-	Official sampling according to Directive 1976/371/EC
Official target sampling and own check programme based on HACCP by the industry	Official target sampling and own check programme based on HACCP by the industry			
-	Monitoring	Monitoring	Monitoring	
HACCP sampling prescribed by law[1] and official targeted control	-	-	-	
Codes of practice for control is applied as part of the HACCP process	x	x	x	
-	x	x	x	
Own check programme based on HACCP by the industry	All complete feedingstuffs must be subject to heat treatment[2]			
-	-	-	-	

Appendix Table SA2. **Salmonella** *monitoring programmes in poultry breeders* **(Gallus gallus)**, *2007*

Countries, running an approved monitoring or control programme[1,5] according to Directive 1992/117/EC; meeting at least the minimum sampling requirements set out by Regulation (EC) No 2160/2003			
MS with approved surveillance programme (Decision 2006/759/EC)	24 MSs except MT, BG[3] and RO[2]		
Non-MS with approved surveillance programmes (ESA Decision No 364/07/COL)	NO		
MS with EU co-financing (Decision 2006/687/EC as amended by Decision 2007/851/EC	20 MSs except FI, LT, LU[4], MT, SI, SE, UK		
Countries with additional sampling (see Table SA3)	AT, DK, FR, NL, SE, UK		
Mimimum requirement according to Regulation (EC) No 2160/2003			
Rearing period		**Production period**	
Day old chicks	Dead chickens / destroyed chickens Samples from the inside of the delivery boxes (internal lining/paper/crate material)	Every 2 weeks	dead chickens or meconium samples
4^{th} week	faecal samples	Every 8 weeks	Official sampling instead of above mentioned sampling
2 weeks before moving	faecal samples		
Diagnostic methods used			
ISO 6579:2002	BE, CZ, EE, GR, IT, NO, PL, SK, SI, ES, NL, SE		
NMKL No 71:1999	SE		
Modified ISO 6579:2002	AT, DK, UK		
Annex D of ISO 6579(2002)	LV		
ISO 6579:2002 / Amendment 1:2007	FI		
AFNOR NF U 47 100 and 47 101	FR		

1. Regulation (EC) 1003/2005 sets the community targets for the reduction of the prevalence of certain *Salmonella* types in breeding flocks of *Gallus gallus*. Setting the testing scheme to verify the achievement of the Community targets for *S.* Enteritidis, *S.* Hader, *S.* Infantis, *S.* Typhimurium and *S.* Virchow
2. From 1 January 2008 Romania must have implemented an approved national programme (Decision 2007/874/EC)
3. From 1 February 2008 Bulgaria must have implemented an approved national programme (Decision 2007/873/EC)
4. Luxembourg does not have any breeding flocks
5. Non-MSs (EFTA members) must apply the EU legislation according to Decision of the EEA Joint Committee No 101/2006

Appendix Table SA3.* Salmonella *monitoring programmes in poultry breeders* (Gallus gallus)*, 2007 – additional sampling

Country	Day old chicks	Rearing period		Production period	
Austria		At week 12	Faecal samples	Every 4 weeks	Boot swabs
Denmark		Week 1,2 and 8	Faecal samples/ boot swabs1	Every week	Boot swabs[1]
				Hatcheries: after each hatch when sampling according to Directive 1992/117/EC (Table SA2) is not carried out	Wet dust samples
				0-4 weeks before moving, 8-0 weeks before slaughter	Boot swabs
France		4 weeks	Boot swabs and chiffs	Every two weeks at hatchery:	5 Hatch tray layers or 250g of shells
				Every 8 weeks at farm (meat); at 24, 36, 54, 62 weeks (eggs):	Boot swabs and chiffs
Netherlands	Leaflets	max. 21 d before transfer	cloacal swabs	From 20 weeks every 4 weeks	Cloacal swabs, 6x25/flock
				Hatchery	Fluff samples (25g) / hatching entity
Netherlands	Leaflets	4 weeks	cloacal swabs	From 20-22 weeks or 22 – 24 weeks every 9 weeks	
		max.21 d before transfer	cloacal swabs	No vaccination:	blood samples[2]
		Decision on vaccination		Vaccination:	
				From week 26 and on	fluff samples, every hatch, every machine
Sweden		Grandparents: 1 - 2 and 9 - 11 weeks	Dead chicks and faecal samples	Every month	Faecal samples
United Kingdom				Additional operator sampling at hatchery - every hatch	Fluff, dust, meconium, chicks etc

1. A "boot swab" consists of elastic cotton tubes pulled over the collector's boots. While walking through the poultry house, the cotton tubes absorb faecal droppings. Two pairs of "boot swabs" analysed as one pool has shown to be just as effective in detecting *Salmonella* as 60 faecal samples. In addition, the sampling method is easier to perform
2. Sample size depends on flock size

Appendix Table SA4. Control measures[5] taken in poultry breeder flocks in case of Salmonella *infection, 2007*

Control measures		Countries
Countries meeting at least the minimum control measures set out by Regulation (EC) No 2160/2003		DK, FI, NO[6]
Serovars covered		
	All Serovars	AT, DK, FI, SE, NO, NL, LT
	S. Enteritidis and *S.* Typhimurium	EE, FR, DE, IE, UK, ES, IT
	S. Enteritidis, *S.* Typhimurium, *S.* Hadar, *S.* Virchow, *S.* Infantis	SI, LV
Restrictions on the flock		
	After confirmation	FI, LV, NL, PL, IT, ES, UK
	Immediately following suspicion	AT, DK, EE, FR, FI, SE, NO, IE, SI
	Chicks already delivered covered by restrictions	NO
Consequence for the flock		
	Treatment	SI
	Slaughter	BE, EE, GR, FR, IE, PL, UK[7], IT
	Restrictions for the delivery of hatching eggs	AT[1], BE[2], EE, ES, FI, LV, NO, NL, DK[1], PL[2], SI, FR, IT, FI, UK[2]
	Slaughter and heat treatment	AT, DK, DE, FI, NL[3], NO, LT, SI, LV
	Destruction	SE, SI
Other consequences		
	Feedingstuffs are restricted (heat treatment or destruction)	DK, EE, FR, NO, SE, SI,
	Disposal of manure restricted	EE, FR, FI, NO, SE, UK, DK, PL, SI, LV
Cleaning and disinfection		
	Obligatory	AT, BE, DK, EE, FR, FI, SE, IE, NO, NL, PL, SI, UK, IT, LT, LV
	Negative bacteriological result required before restocking	AT, DK, EE, FR, FI, IE, NO, NL, SI, SE, UK, IT, LT, LV
	Requirement of an empty period	AT (14 days), EE (3 weeks), FR (less than 30 days), N0 (30 days after disinfection), IT (30 days after disinfection)
Further investigations		
	Epidemiological investigation is always started	EE, FI, FR, NO, SE, IE, NL, UK, IT, SI, LV
	Feed suppliers are always included in the investigation	FI, NO, SE, IE, NL, UK, SI, LV
	Contact herds are included in the investigation	FI, FR, IE, NO, NL, SE, UK, LV
Vaccination		
	Mandatory	AT
	Recommended	BE
	Permitted	CY, DK[4], SI, ES, UK, IT , LT, LV
	Prohibited	EE, FI, NO, SE

1. Destruction of the hatching eggs
2. Destruction of incubated eggs, not yet incubated eggs may be pasteurised
3. In the Netherlands, only flocks that are positive for *S.* Enteritidis or *S.* Typhimurium are compulsorily slaughtered
4. In Denmark, there are no vaccinations as no vaccinations have been approved by The Danish Veterinary and Food Administration
5. Mimimum control measures are set out in Regulation (EC) 2160/2003, annex II (D)
6. EFTA countries have to comply with Regulation (EC) 2160/2003 according to EEA Joint Committee no 101/2006
7. In the United Kingdom, only flocks that are positive for *S.* Enteritidis or *S.* Typhimurium are compulsorily slaughtered

Appendix Table SA5.* Salmonella *monitoring programmes in laying hens* (Gallus gallus) *producing table eggs, 2007

Day old chicks		Rearing period		Production period	
Type of sample					
Samples from the inside of the delivery boxes (internal lining/paper/crate material)	CZ, DK, FR, LV, NO, PL, LT, SI[1]	Faecal samples/ Boot swabs	CZ[1], DK[1], EE[1], IE[1], FI, FR, LV, NO, NL, PL, SK, SE[5], SI[1], UK[6]	Faecal samples/ Boot swabs	AT[2], BE[1], CZ[1], DK, EE[1], IE, FI, FR, LV, NL[1], NO, PL, LT, SK, SE[5], ES, UK[6]
Dust samples	UK[6]	Dust samples	FR, UK[6]	Dust samples	FR, IE[1], UK[6]
Meconium	AT, EE, FR, PL, SK, SE, UK[6]	Blood samples	DK[1], NL[1]	Blood samples	NL[1]
Dead chickens	AT, CZ, DK, EE, GR, LV, SK, SI[1], SE, UK[6], LT			Egg samples	DK, UK[6]
Frequency of sampling					
Each delivery	DK, LV, SK, SI, UK	At 3 weeks	DK	Every 9 weeks	DK[3], LT
Every flock	CZ, FR, SE, LT, NO	At 4 weeks	CZ, SK, LT	Three times	DK[4], NO
Voluntary	PL	At 2 weeks before transfer	DK, EE, FI, FR, LV, LT, NO, PL, SE, SI, SK	At 25-30 and 50 weeks	LV, NO, SE[5]
		Max 21 days before transfer	NL	At 22-26 weeks and 8 weeks before slaughter	EE
		Monthly	IE	At 24, 40 and 55 weeks	FR
				Max 9 weeks before slaughter	NL
				Every 15-20 weeks, 2 weeks before slaughter	PL
				Every 2 weeks	SK
				Monthly	IE
				Every 12 weeks	AT, CZ
				At 22-26 weeks, after that every 15. week	SE[5]
				Every 15 weeks	FI
				3 weeks before slaughter	BE
Diagnostic methods used through out the production					
ISO 6579 (2002)			AT, BE, CZ, EE, GR, IT, LV, NO, PL, SE, SK, SI, ES		
ISO 6579 (2002) / Amendment 1:2007			FI		
NMKL No 71:1999			SE		
AFNOR NF 47 100 and 47 101			FR		
The method described in the O.I.E. manual, 5th ed., 2004			SI		
Buffered Peptone water			PT		
Various bacteriological			DK, LT, UK		
No information			CY, DE, HU, IE, LU, MT		
Countries with no official sampling strategies, 2007					
			IT[7], PT[8], ES, UK		

Note: Monitoring is not compulsory by Directive 2003/99/EC
1. Number of samples depend on flock size
2. In Austria, sampling is voluntary
3. In Denmark, for eggs sold to authorised egg-packing stations
4. In Denmark, for eggs sold at farmyard sale or hobby poultry keeping
5. In Sweden, samples are collected from all holdings placing eggs on the market and holdings>200 layers not placing eggs on the market.
6. In the United Kingdom sampling is voluntary in 2007. All isolations of *Salmonella* must be reported
7. In Italy, a compulsory control programme is running in the Veneto region
8. In Portugal, a surveillance programme is running in one region (Beira Litoral)

Appendix Table SA6. Measures taken in laying hens* (Gallus gallus) *producing table eggs in case of* Salmonella *infections, 2007

Control measures	Countries
Serovars covered	
All Serovars	AT, DK, FI, NO, LT, SE[1]
S. Enteritidis and *S.* Typhimurium	CZ, EE, FR[2], NL, IE, PL, SK, UK[10]
S. Enteritidis, *S.* Typhimurium, *S.* Hadar, *S.* Virchow, *S.* Infantis	SI
Restrictions on the flock	
Immediately following suspicion	DK, EE, FR, IE, NO, NL, PL, SI, SE
Eggs covered by restrictions already on the basis of suspicion	DK, FR, IE, NO, NL, PL, SE, SI
Consequence for the flock	
Recovery or slaughter	
Slaughtered	GR, IE, PL, SK
Flocks destroyed	LT, SI
Sanitary slaughter	DK, FR
Destruction	CY, CZ, SE[4], SI
Slaughter or destruction	EE
Sanitary slaughter or destruction	NO
Slaughter and heat treatment or destruction	FI
Treatment with antibiotics	AT[3], CZ, EE, PL, SI[5]
Consequence for table eggs	
Destruction	CY, EE, SE[4]
Heat treatment	AT, BE, CZ, DK, FI, FR, IE[6], LT, NL[6], SE[3]
Destruction or heat treatment	NO, PL, SK, SI
Other consequences	
Feedingstuffs are restricted (heat treatment or destruction)	DK, EE, NO, SI, SE
Disposal of manure restricted	EE, FI, FR, NO, PL, SK, SI, SE
Cleaning and disinfection	
Obligatory	BE, EE, FR, FI, DK, IE, NO, NL, PL, SK, SI, SE, LT
Negative bacteriological result required before restocking	FR, FI, IE, NO, NL, DK, SI, SE
Requirement of an empty period	DK, EE (21 days), FR, NO (30 days)
Further investigations	
Epidemiological investigation is always started	EE, FR, FI, IE, NO, NL, SE, UK, SI
Feed suppliers are always included in the investigation	EE, FI, IE, NO, NL, SE, SI
Contact herds are included in the investigation	EE, FI, FR, IE, NO, NL, SE
Intensification of the examination of non-infected flocks on the same farm	DK, FR, IE, NO, NL, SE
Vaccination	
Mandatory	HU
Recommended	AT[7], BE
Permitted	DK[8], CZ, FR, SK, ES[9], UK, LT, SI
Prohibited	EE, FI, LV, NO, SE

Note: No measures are fixed in Directive 2003/99/EC
1. In Sweden, for invasive serovars and non-invasive serovars different control strategies may be applied
2. In France, during the rearing period, *S.* Typhimurium and *S.* Enteritidis are included. During the table egg production period in holdings lacing their eggs on the market via an egg packing centre, only *S.* Enteritidis is included until 60 weeks, and a last sampling is used to detect *S.* Typhimurium
3. Non-invasive *Salmonella*
4. Invasive *Salmonella*
5. In Slovenia, *S.* Enteritidis and *S.* Typhimurium only at rearing period. Other three serotypes at all production stages
6. Eggs are pasteurised until the flock is destroyed
7. In Austria, vaccination against *S.* Enteritidis recommended
8. In Denmark, there are no vaccinations as no vaccines have been approved by The Danish Veterinary and Food Administration
9. In Spain, only in rearing period
10. Voluntary operator monitoring in the United Kingdom in 2007. All isolations of *Salmonella* must be reported

Appendix Table SA7.* Salmonella *monitoring programmes in broiler flocks* (Gallus gallus) *and broiler meat products, 2007

Day old chicks		Before slaughter at farm	
Type of sample			
Samples from the inside of the delivery boxes (internal lining/paper/crate material)	DK, EE, PL	Faecal samples/ boot swabs	AT, BE[1], DK, EE[1], FI, LV, NL[1], NO, PL, SK, SE[2], UK[1,3]
Dust samples (at hatchery)	DK, UK[3]	Dust samples	FR
Leaflets	NL	Bedding	SI, UK[1,3]
Meconium	AT, PL, SK, SE, UK[3]		
Dead chicks	AT, DK, EE, SK, UK[3]		
Frequency of sampling			
Each delivery	DK, SK	1-3 weeks before slaughter	AT, BE, DK, EE, FI, LV, NO, PL, SI, UK[3]
Each batch	NL, EE	2 weeks before slaughter	SE
Each flock	SE		
Every two weeks at hatchery	AT		
Diagnostic methods			
ISO 6579 (2002)			BE, CZ, EE, FI, GR, IT, NO, PL, SE (faecal samples), SK, UK
Annex D of ISO 6579 (2002)			LV
Modified ISO 6579 (2002)			AT, DE, SI
ISO 6579 (2002) / Amendment 1:2007			FI (Flocks)
NMKL No 71:1999			EE, FI, SE (meat samples)
Various bacteriological methods			DK, LT, UK
Method in accordance with the O.I.E. manual, 5th ed., 2004			SI
Countries with no official monitoring, 2007			
			CZ, ES, IT[5], PT[6], UK[3]

Note: Monitoring is not compulsory by Directive 2003/99/EC
1. Number of samples depend on flock size or slaughterhouse/cutting plant capacity
2. Two sock samples or two faecal samples of 75 g. Number of samples depends on the slaughtering capacity
3. Voluntary operator monitoring in the United Kingdom in 2007. All isolations of *Salmonella* must be reported
4. In Slovenia, monitoring is based on results from previous years
5. In Italy, a monitoring programme is running in the Veneto Region
6. In Portugal, a surveillance programme is running in one region (Beira Litoral)

Slaughterhouse and cutting plant		Processing plants		At retail	
Neck skin samples	BE, CZ, EE, IE, LT, SE, UK[1]	Depend on survey or own-control plans	DK, SE	Depend on survey or own-control plans	DK, SE
Breast skin samples	NL	Fresh meat, minced meat, final products	AT, EE, LT, LV	Fresh meat, final products	AT, EE, LT, LV
Fresh meat	AT, LV, SI[1]	Fresh meat	IE	Fresh meat	NL, SI[4]
Cuts of meat (close to packaging)	DK	Final product	CZ, IE	Final product	CZ, DE
Carcass swabs	IE			Environmental samples	LV
At cutting plants: Crushed meat samples[7]	EE[1],FI[1], SE[1]				
Weekly	BE, CZ, SI	Weekly	CZ	Monitoring	DE, IE, NL
Monthly	SI	Surveys or own-control	DK, SE	Survey or own-control	DK, SE
Random and continuous	AT, EE, FI	Random and continuous	AT, EE	Random and continuous	AT, CZ, EE
Systematic and continuous	SE	Continuous	LV	Continuous	LV, SI, UK
Continuous	LV	Twice a year	IE		
Each flock	IE, LT	Random or routine, depend on programme	LT		
Each batch	DK				
Each flock/batch	IT, NL, UK				

Appendix Table SA8. Measures taken in broilers (Gallus gallus) *in case of* Salmonella *infections, 2007*

Control measures	Countries
Serovars covered	
All Serovars	AT, DK, FI, LT, NO, NL, SE[1]
S. Enteritidis and *S.* Typhimurium	EE, IE, LV, SI, SK, UK
Restrictions on the flock	
Immediately following suspicion	DK, EE, LV, NO, NL, SI, SE
Consequence for the flock	
Slaughter	SK
Slaughtered and heat treated	AT, FI, LT, NO, SI
Sanitary slaughter	BE, DK, IE, LV, NL, UK
Destruction	FI, LV, SE
Slaughter or destruction	EE, IE, LV, SK, UK
Treatment with antibiotics	AT, EE
Other consequence	
Feedingstuffs are restricted (heat treatment or destruction)	EE, NO, SE
Disposal of manure restricted	EE, FI, LV, NO, SK, SI, SE
Cleaning and disinfection	
Obligatory	AT, DK, EE, FI, LT, LV, NO, NL, SI, SE
Negative bacteriological result required before restocking	DK, EE, FI, NL, NO, SI, SE
Requirement of an empty period	AT (14 days), EE (21 days), NO (30 days after disinfection)
Further investigations	
Epidemiological investigation is always started	EE, FI, IE, NO, SE, UK(GB)
Feed suppliers are always included in the investigation	EE, FI, IE, NO, NL, SE
Contact herds are included in the investigation	EE, FI, NO, SE
Breeding flock that contributed to the hatch will be traced	FI, IE, NO, NL, UK, SE
Vaccination	
Permitted	AT, CZ, DK[2], LT, SI, SK, UK
Prohibited	EE, FI, LV, NO, SE

Note: No measures fixed in Directive 2003/99/EC
1. In Sweden, for invasive serovars and non-invasive serovars different control strategies may be applied but are not used in practice
2. In Denmark, there are no vaccinations as no vaccines have been approved by The Danish Veterinary and Food Administration

Appendix Table SA9. Salmonella *monitoring programmes in turkey breeders, 2007*

Day old chicks		Rearing period			Production period		
Sampling scheme following the provisions of Directive 1992/117/EC							
Samples from the inside of the delivery boxes (internal lining/paper/crate material)	FI, LV, NO, PL, SK, LT	At age of 4 weeks and 2 weeks before moving.	faecal samples	FI, LV, NO, PL, SK, LT	Official sampling every 8 weeks	meconium samples at the hatchery	LV[3], PL, SK
Meconium	SE	At age of 4 weeks and 2 weeks before moving.	Sock samples	SE	At hatchery: every 2 weeks	Samples from the underlying papers of hatching baskets	FI
Dead chickens/destroyed chickens	LV, PL, SK, LT				Every 2 weeks	Faecal samples	LT, LV[3], NO
					Every 2 weeks	5 pair of sock samples	SE
					Offical sampling 3 times during production period	5 pair of sock samples	SE
					Every 2 weeks	Dead chickens	PL, SK
					At holding: twice during laying period	faecal samples	FI
Other sampling schemes							
Swabs/faeces	CZ[1]		Swabs/faeces	CZ[1], FR, NL		Swabs/faeces	CZ[1], FR, NL
Internal lining papers of delivery boxes	FR	Every 4 weeks	Chicks, dust swab	FR	Every 4 weeks	On farm:Chicks, dust swab	FR
Sample scheme approved by EU (Decision 96/389/EC)	IE	Sample scheme approved by EU (Decision 96/389/EC)		IE	Sample scheme approved by EU (Decision 96/389/EC)		IE
Samples from the lorry and 1 week after arrival: Wooswool samples	NL				Hatchery, every hatch, every machine	Fluff samples	NL
					Every 4 weeks	At hatchery: Environmental swab	FR
					Hatchery	Samples of imported eggs	AT
Diagnostic methods used							
ISO 6579:2002		CZ, NO, LV, PL, SE					
ISO 6579:2002 / Amendment 1:2007		FI					
Countries not providing detailed information about monitoring programmes							
No information available		CY, FR, DE, GR, HU, IE, LT, LU, MT, PT, SI, ES					
No official surveillance programme		BE, CZ, DK, IT, NL, UK[2]					
No turkey breeder flocks present		AT, EE, LV[3]					

1. In Czech Republic, only clinically ill or suspected animals are sampled
2. In UK monitoring programmes are voluntary. Breeders are encouraged to monitor in the same way as for *Gallus gallus* under Directive 92/117. All isolations of *Salmonella* must be reported
3. In Latvia, monitoring programmes exist, but at the moment there are no breeder flocks

Appendix Table SA10.* Salmonella *monitoring programmes in turkeys, turkey meat and meat products, 2007

Day old chicks		Rearing period and before slaughter		At slaughter and at cutting plants	
Type of sample				**Type of sample**	
Faecal samples/swabs	CZ[1]	Faecal samples/ boot swabs	CZ[1], DK[2], FI, NO, NL, SE	Fresh meat	LV, SI
Dust samples	IE	Dust samples	FR	Cuts of meat (batches close to packing)	DK[1]
Chicks	NL	Cloacal swabs	AT	Neck skin samples	CZ, IE[7], LT, SE
Sampling based on the directive	PL	Sampling based on the directive	PL	Dependent on survey	UK
				Carcasses	AT, IE
				Cloacal swabs and caecum	IT
				Crushed meat	FI[2, 5]
Frequency of sampling					
Every two months	IE	1 – 3 weeks before slaughter	AT, DK[3], FI, NO, PL	Every Batch	DK, SE[2]
		Max 4 weeks before slaughter	NL	Weekly	CZ
		2 weeks before slaughter	SE	Random and continuous	FI
				Continuous	AT, LV
				Monthly	SI
				Every flock	LT
Diagnostic methods used					
ISO 6579:2002			CZ, EE, FI, IT, LT, LV, PL, SE (faecal samples), SI, UK		
NMKL No 71:1999			FI, NO, SE (meat samples)		
Modified ISO 6579:2002			AT, DE, IT		
ISO 6579:2002 / Amendment 1:2007			FI (Flocks)		
Depend on the laboratory and/or survey			DK		
Countries not providing detailed information about monitoring programmes					
No information available			AT, CY, DE, GR, HU, LT, LU, MT, PT, SK, SI, ES		
No official surveillance programme			BE, CZ, IT, UK[4]		
No turkey production flocks present			EE, LV		

1. In Czech Republic, only clinically ill or suspected animals are sampled
2. Sample size and frequency depend on slaughterhouse and cutting plant capacity
3. In Denmark, a monitoring programme exist however all turkeys are slaughtered abroad, hence no sampling
4. Monitoring programme in UK is voluntary. All isolations of *Salmonella* must be reported
5. Crushed fresh meat from cleaning tools, tables etc.; similar approach for ducks, geese and guinea fowl
6. In Slovenia, monitoring is based on results from previous years
7. In Ireland, private samples by individual plants

Processing plants		Turkey meat and meat products at retail	
Crushed meat	SE[2]	Routine sampling	IE
Fresh meat, minced meat, final products	AT, LV, LT	Fresh meat	SI[6]
		Fresh meat, final products	EE, LV, LT
Final product	CZ, IE	Final product	CZ, DE
Depend on survey	DK, UK	Depend on survey	DK, SE, UK
Twice yearly	IE	Surveys	DK
Weekly	CZ	Random and continuous	CZ, EE
Surveys	DK, UK	Continuous	LV
Continuous	AT, LV	Monitoring	DE, UK, LT
		February-March	SI
Random or routine, depend on programme	LT		

Appendix Table SA11. **Salmonella** *monitoring programmes in duck breeders, 2007*

Day old chicks		Rearing period			Production period		
Sampling scheme following the provisions of Directive 1992/117/EC							
Dead chickens	LV, PL, SK, LT[6]	At the age of 4 weeks and 2 weeks before moving	Faecal samples	LV, NO, PL, SK, LT, SE	Every 2 weeks	Dead chickens	PL, SK
Samples from the internal linings of the delivery boxes	LV, NO, PL, SK, LT				Every 2 weeks	Sock samples	SE
Meconium	SE				Every 2 weeks	Faecal samples	LT, LV[4], NO
Each flock is sampled six times a year in accordance with plan approved by Decision 96/389/EC	IE		Each flock is sampled six times a year in accordance with plan approved by Decision 96/389/EC	IE	Official sampling - 3 times during the production period		SE
					Official sampling every 8 weeks	Meconium samples at the hatchery	LV[3], PL, SK
Other schemes							
Internal lining papers of delivery boxes	FR	At the age of 2 and 10 weeks and 2 weeks before moving	On farm: Faecal and litter samples, dust swab	FR[2]	Every 2 months	On farm: Faecal and litter samples, dust swab	FR[2]
Swabs/faeces	CZ[1]		Swabs/faeces	CZ[1]		In hatchery: Environmental swab	FR[5]
						Swabs/faeces	CZ[1]
Diagnostic methods used							
ISO 6579:2002	CZ, LV, NO, PL, LT, SE (faecal samples)						
NMKL No 71:1999	SE (meat samples)						
Countries not providing detailed information about monitoring programmes							
No information available	AT, CY, FI, FR, DE, GR, HU, IE, LT, LU, MT, NL, PT, SI, ES						
No official surveillance programme	BE, CZ, DK, IT, UK[7]						
No duck breeder flocks present	EE, LV[6]						

1. In Czech Republic, only clinically ill or suspected animals are sampled
2. In France, 1 gauze swab (the sampling method consists in wiping 5 different sites of the poultry house)
3. In Latvia, breeding flocks whose eggs are hatched at a hatchery with a total incubator capacity of 1,000 eggs or more
4. In Latvia, breeding flocks whose eggs are hatched at a hatchery with a total incubator capacity of less than 1,000 eggs
5. In France, 1 gauze swab (the sampling method consists in wiping the wall of the hatching cabinets or the lining pads of 5 different hatching trays)
6. In Latvia, monitoring programmes exist, but at the moment there are no breeder flocks
7. Monitoring programme in UK is voluntary. All isolations of *Salmonella* must be reported

Appendix Table SA12. Salmonella *monitoring programmes in geese breeders, 2007*

Day old chicks		Rearing period			Production period		
Sampling scheme following the provisions of Directive 1992/117/EC							
Samples from the internal linings of the delivery boxes	SE, NO, PL, SK	At the age of 4 weeks and 2 weeks before moving	faecal samples	NO, PL, SK, SE	Every 2 weeks	dead chickens	PL, SK
Dead chickens	SE, PL, SK				Every 2 weeks and once in between production cycles	Faecal samples	NO
Meconium	SE				Once a month	Faecal samples	SE
					Official sampling every 8 weeks	meconium samples at the hatchery	PL, SK
Other schemes							
Internal lining papers of delivery boxes	FR	At the age of 2 and 10 weeks and 2 weeks before moving	On farm: Faecal and litter samples, dust swab	FR	Every 2 months	On farm: Faecal and litter samples, dust swab	FR
Swabs/faeces	CZ[1]		Swabs/faeces	CZ[1]		In hatchery: Environmental swab	FR
						Swabs/faeces	CZ[1]
ISO 6579:2002		CZ, LV, NO, PL					
NMKL No 71:1999		SE					
Countries not providing detailed information about monitoring programmes							
No information available		AT, CY, FI, DE, GR, HU, IE, LT[2], LU, MT, NL, PT, SI, ES					
No official surveillance programme		BE, CZ, DK, IT, UK[3]					
No geese breeder flocks present		EE, LV					

1. In Czech Republic, only clinically ill or suspected animals are sampled
2. In Lithuania there are no breeding flocks at the moment. LT apply general monitoring programme for poultry
3. In UK monitoring programmes are voluntary. Breeders are encouraged to monitor in the same way as for *Gallus gallus* under Directive 92/117. All isolations of *Salmonella* must be reported

Appendix Table SA13. Salmonella *monitoring programmes in ducks and geese – production level, 2007*

Day old chicks		Rearing period and before slaughter (related to the flock)		At slaughter (related to the flock)	
Type of sample					
Faecal/swabs	CZ[1]	Faecal samples/ boot swabs	CZ[1],DK[2], NO, SE	Carcass samples	IE
Sampling based on the Directive 2003/99/EC	PL	Sampling based on the Directive 2003/99/EC	PL	Sampling based on the Directive 2003/99/EC	PL
		Cloacal swabs	AT	Neck skin samples	AT[3], SE
				Faecal samples/ boot swabs	CZ[1]
Frequency of sampling					
		1 – 3 weeks before slaughter	AT, DK, NO, PL, SE		
Diagnostic methods used					
ISO 6579:2002		CZ, LV, NO, PL, LT			
NMKL No 71:1999		SE			
Countries not providing detailed information about monitoring programmes					
No information available		AT, CY, FI, FR, DE, GR, HU, LT, LU, MT, NL, PT, SK, SI, ES			
No official surveillance programme		BE, CZ, IT, UK[4]			
No duck and geese production flocks present		EE			

1. In Czech Republic, only clinically ill or suspected animals are sampled
2. In Denmark, from 2007 all flocks are slaughtered abroad hence no sampling at the moment
3. In Austria, flocks with positive findings in cloacal swabs (and if the carcasses are not subject to heat treatment)
4. Monitoring programme in the United Kingdom is voluntary. All isolations of *Salmonella* must be reported

Appendix Table SA14. Salmonella *monitoring programmes in pigs, 2007*

Breeding and multiplying herds - at farm		Fattening herds – at farm		Fattening herds – at slaughter	
Type of sample					
Blood samples	DK	Blood samples	BE[1]	Meat juice	DK[6], UK[7]
Faecal samples/ boot swabs	CZ, DK[4], EE[3], FI[3], NO, SE	Faecal samples/ boot swabs	AT, CZ, DK[4], EE[3], FI, NL, NO, SE[5]	Faecal samples/ boot swabs	CZ, DK[1]
Carcass/rectal swabs/litter/feed	SI	Carcass/rectal swabs/litter/feed	SI	Lymph nodes	FI, NO[1, 2], SE[1], SI
				Carcass swabs	BE, DK, NO[1,2], SE[1], EE
Frequency of sampling					
Monthly	DK, SI	Monthly	SI	Monthly	SI
Clinical suspicion	CZ, FI, SK, SI	Clinical suspicion	NO, SE, SK, SI	Clinical suspicion	CZ
Once a year – all elite herds	FI, NO, SE	Random samples	NL	Continuous, random samples	BE, DK, EE, FI, NO, SE
Twice a year - all sow herds	SE				
Diagnostic methods					
Modified ISO 6579 (2002)	AT, LT				
ISO 6579 (2002)	CZ, EE, FI, GR, NL, SI, SK				
Mix ELISA	DK, UK				
NMKL No 71:1999	FI, NO, SE				
Strategies in countries with no official sampling strategies, 2006					
No official monitoring	BE[8], CY, CZ, GR, IT[9], LV, PL, SK, LT, UK[7]				

Note: Monitoring is not compulsory by Directive 2003/99/EC
In this table priority is given to farm-based approaches; sample based approaches at slaughterhouse may be described in Table SA16

1. Number of samples depends on slaughterhouse capacity or farm capacity
2. In Norway, sows from multiplying herds are sampled in the same way as slaughter pigs at slaughter
3. In Finland and Estonia, all pigs sent to semen collection centres have to be examined for *Salmonella* with negative results
4. In Denmark, pen faecal sampling is carried out if serological results from the blood samples (breeding and multiplying herds) and meat juice samples (fattening pigs) are too high
5. In Sweden, pen faecal samples herds are affiliated to voluntary heath control programmes
6. In Denmark, all herds producing more than 200 pigs for slaughter per year are monitored
7. In the United Kingdom, sampling is voluntary. All isolations of *Salmonella* must be reported
8. In Belgium, samples are collected as part of a monitoring programme for Aujeszky's disease
9. In Italy, a monitoring programme is running in the Veneto Region

Appendix Table SA15. Measures taken in pig herds in case of Salmonella *infections or* Salmonella *findings, 2007*

Control measures	Countries
Serovars covered	
All Serovars	AT[2], DK, EE[3], FI, SE, NO, UK (GB), SI
Only *S.* Enteritidis, *S.* Typhimurium	CZ, UK (Northern Ireland)
Restrictions on the farm	
Animal movement prohibited	FI, SE, NO, SI[4]
Isolation of *Salmonella* positive animals	EE, FI, NO, SI[4]
Human contact restricted	EE, SE, NO, SI[4]
Advise to the farm for controlling the infection	FI, SE, NO, UK, SI[4]
Consequence for slaughter animals	
Slaughterhouse is informed on positive animals	EE, NO, SE, FI
Sanitary slaughter	DK[5], EE, FI, NO[6], SE[7]
Contaminated food withdrawn from market	NO, SE
Treatment with antibiotics	EE, SI
Other consequences	
Feedingstuffs are restricted (heat treatment or destruction)	SE, SI
Treatment of manure / sludge	EE, DK[5], SI[4], SE, NO
Public health advice	UK
Cleaning and disinfection obligatory	EE, FI, NO, SI[4], SE
Repeated negative testing necessary before lifting the restrictions[1]	EE, FI, SE, NO
Reduction in payment for positive slaughter pigs	DK
Further investigations	
Epidemiological investigation is started	BE, DK, EE, FI, NO, SI[4], SE
Feed suppliers are included in the investigation	DK, EE, FI, NO, SE
Contact herds are included in the investigation	DK, FI, NO, SE
Vaccination	
Permitted	BG, CZ, UK, SI[4]
No vaccinations	AT, BE[8], DK[8], SE
Prohibited	EE, FI, NO

Note: No measures fixed in Directive 2003/99/EC

1. Typically, two consecutive samplings one month apart
2. In Austria, the carcasses contaminated with *Salmonella* are unfit for human consumption and must be removed. In all slaughtered animals descending from the same holding a post-mortem bacteriological examination has to be initiated
3. In Estonia, *S.* Enteritidis, *S.* Typhimurium, *S.* Dublin, *S.* Newport and *S.* Cholerasuis are notifiable
4. Measures are taken in case of clinical signs
5. In Denmark, herds with a high serological *Salmonella* index
6. In Norway, samples from all sanitary slaughtered animals must be tested for *Salmonella*. If positive, the carcass is condemned
7. In Sweden, samples are collected from all sanitary slaughtered animals
8. No vaccine has been approved

Appendix Table SA16. **Salmonella** *monitoring programmes in pigs and pig meat, 2007*

Slaughterhouse and cutting plant		Processing plants		Pork and pork products at retail	
Type of sample					
Meat juice	UK[5]	Surface swabs	HU	Regional programmes	UK (GB)
Surface swabs	BE, CZ, DK[1], EE[1], FI[1], DE, NO[1], SE[1], SI	Depend on survey or own-control plans	DK[2], SE[2]	Depend on survey or own-control plans	DK[2], SE[2]
Fresh meat	EE[1], HU[4], SI	Fresh meat	EE, HU[4], LV	Fresh meat	NL
Lymph nodes	NO[1], SE[1], FI, SI	Final product	CZ, EE, IE	Final product	CZ, DE
Cutting and minced meat samples	BE, NO[6]			Minced meat	AT, BE
Crushed meat samples (cutting plants)	FI[1], NO[1,3], SE[1]			Fresh meat, final products	AT, EE, LV, LT
Frequency					
Random and continuous	DK, EE, ES, FI, HU, NO, SE	Random and continuous	CZ, EE, ES, LV	Random and continuous	AT, CZ, EE, ES, LV, NL, SE
Weekly	BE	Follow the Directive 03/99/EC	CZ	Weekly	BE
Every 2 weeks	CZ			May-August	SI
Monthly	SI (lymph nodes)			Voluntary	CZ
Every 2 months	SI (fresh meat)				
Diagnostic methods					
Modified ISO 6579:1999		AT, DE, IT			
Belgian official method SP-VG-M002		BE			
ISO 6579:2002		CZ, EE, FI, HU, IT, LV, SI, SE, ES			
Depend on the laboratory and/or survey		DK			
NMKL No 71:1999		FI, NO, SE			
Any method according to Comm. Decision 2003/470		SE			

Note: Monitoring is not compulsory by Directive 2003/99/EC
In this table priority is given to sample-based approaches; farm-based approaches at slaughterhouse may be described in Table SA14
1. Sample size and frequency depend on slaughterhouse capacity
2. Sampling by local authorities
3. Samples collected from cutting equipment, cleaning tools, tables etc.
4. In Hungary, sampling strategy is based on the previous year's production
5. Voluntary monitoring and control scheme in the United Kingdom
6. Sampling according to Directive 94/65/EC

Appendix Table SA17. Salmonella *monitoring programmes in cattle and bovine meat, 2007*

Breeding herds - at farm		Cattle - at farms		Slaughterhouse and cutting plant	
Type of sample					
Faecal samples	EE[4], FI[4]	Faecal samples	DK[1], CZ, EE[3], FI, DE, NL, NO, SK, UK[8]	carcass swabs	CZ, DK[2], EE[2], FI[2], LV, NO[2], SE[2], SI
		Bulk milk/Blood samples	DK	Lymph nodes at slaughter	FI[2], NO[2], SE[2]
		Organ samples	UK[8]	Fresh meat at cutting plants	AT, HU, SI
				Crushed meat samples[6] at cutting plants	EE[2],FI[2], NO[2], SE[2]
				Faeces from rectum	GB
				Faeces (at slaughterhouse)	CZ, DE, SI, SK
				Minced beef	AT, BE
Frequency of sampling					
		Every three months	DK	Weekly	BE
		Once a year	NL	Monthly	CZ, SI
		Clinical suspicion	FI, DE, NO, CZ, SK, SE	Random and continuous	AT, EE, DK, DE, FI, NO, SE, SI, ES
				Clinical suspicion	CZ, DE
Diagnostic methods used through the production					
Modified ISO 6579 (2002)				AT, CZ, DE, EE, FI, FR, HU, IT, SE, SK, SI, ES, LT	
ISO 6579 (2002)				CZ, EE, FI, GR, LV, SK	
Mix-ELISA				DK	
Belgian official method SP-VG-M002				BE	
NMKL No 71:1999				FI, NO, SE	
Other approved methods according to Decision 2003/470/EC				SE	
Strategies in countries with no official sampling strategies, 2007					
No official monitoring				BE, CY, CZ, GR, IT[7], LV[8], PL, SK, UK[9]	

Note: Monitoring is not compulsory by Directive 2003/99/EC
1. In Denmark, when requested by the farmer
2. Sample size and frequency depend on slaughterhouse and cutting plant capacity
3. In Estonia, number of samples depend on herd size
4. In Estonia and Finland, all animals sent to semen collection centres have to be examined for *Salmonella* with negative results
5. Sampling by local authorities
6. Samples collected from cutting equipment, cleaning tools, tables etc.
7. In Italy, a monitoring programme is running in the Veneto Region
8. In Latvia no official monitoring at farm level, but samples are collected through official surveillance at slaughterhouse level
9. In the United Kingdom, sampling is voluntary. Reporting of isolation of *Salmonella* in all farmed animals is statutory

Processing plants		Beef at retail	
Depend on survey or own-control plans	DK[5], SE[5]	Depend on survey or own-control plans	DK[5], SE[5], UK[5]
Scrapings	SE	Minced beef	AT, BE, EE
Fresh meat	SI	Fresh meat	NL
Fresh meat, minced meat, final prod-ucts	AT, EE, DE, HU, ES	Fresh meat, final products	AT, EE, HU, LT
Final product	CZ, HU	Final product	CZ, DE
		Weekly	BE
Monthly	CZ	Monthly, voluntary	CZ
Random and continuous	AT, EE, DE, HU, ES	Random and continuous	AT, CZ, EE, HU, DE, ES
Every 2 months	SI		
Sampling according to Directive 94/65/EC	NO		

Appendix Table SA18. Measures which may be taken in cattle herds in case of* Salmonella *infections or* Salmonella *findings, 2007

Control measures	Countries
Serovars covered	
All Serovars	AT, DK, EE, FI, NO, SE, UK, SI
Only *S.* Enteritidis, *S.* Typhimurium	CZ
Restrictions on the farm	
Animal movement prohibited	FI, DK (Multiresistant *S.* Typhimurium DT 104), SE, NO, SI[3]
Isolation of *Salmonella* positive animals	EE, FI, NO, SE, SI[3]
Person contacts restricted	EE, NO, SE, SI[3]
Restriction on marketing of milk	NO, SE
Pasteurisation of milk obligatory	EE, FI, NO, SE
Advise to the farm for controlling the infection	DK, FI, NO, SK, SE, UK-GB, SI[3]
Consequence for slaughter animals	
Slaughterhouse is informed of positive animals	EE, FI, NO, SE
Sanitary slaughter	EE, DK, FI, NO[2], SE[4]
Contaminated food withdrawn from the market	AT, NO, SE
Destruction of positive animals	DE, SE (in some instances)
Treatment with antibiotics	EE, SI[3]
Other consequences	
Feedingstuffs are restricted (heat treatment or destruction)	SK, SE, SI[3]
Treatment of manure / sludge	EE, DK, NO, SK, SE, SI[3]
Cleaning and disinfection obligatory	EE, FI, NO, SE, SI[3]
Repeated negative testing necessary before lifting the restrictions[1]	EE, DK, FI, NO, SE
Public health advice	UK (Northern Ireland)
Further investigations	
Epidemiological investigation is always started	DK (Multiresistant *S.* Typhimurium DT 104), EE, FI, NO, SK, SE, UK (Northern Ireland)[5], SI[3]
Feed suppliers are always included in the investigation	EE, FI, NO, SE
Contact herds are included in the investigation	DK (Multiresistant *S.* Typhimurium DT 104), FI, NO, SE
Vaccination	
Permitted	CZ, DE, UK (GB: *S.* Dublin), SI
No vaccinations	AT, BE[6], DK[6], SE
Prohibited	EE, FI, NO

Note: No measures fixed in Directive 2003/99/EC
1. Typically, two consecutive samplings one month apart
2. In Norway samples from all sanitary slaughtered animals must be tested for *Salmonella*. If positive, the carcass is condemned
3. Measures are taken in case of clinical signs
4. In Sweden, all sanitary slaughtered animals are analysed for *Salmonella*
5. In Northern Ireland, when *S.* Enteritidis, *S.* Typhimurium is isolated, or any serotype is isolated in milk
6. No vaccine has been approved

Appendix Table SA19. Notification on* Salmonella *in humans,* Gallus gallus, *other animals and food, 2007

Country	Notifiable in humans since	Notifiable in *Gallus gallus* since	Notifiable in other animals since	Notifiable in food since
Austria	1947[1, 2]	1998[3]	1994[4]	1975
Belgium	< 1999	1998	1998	2004
Cyprus	yes	yes	yes	-
Czech Republic	yes	yes	yes	-
Denmark	1979	no	1993[4]	-
Estonia	1958	2000[5]	2000[5]	2000
Finland	1995[6]	1970s	1970s	1970s
France	1986	yes[7] (1998)	-	yes
Germany	yes	-	yes	-
Greece	yes	1992	1980	-
Hungary	1959	no	no	1984
Ireland	1948	1996	1992	not notifiable[8]
Italy	1990	1954	1954	1962
Latvia	1958	yes	yes	2002
Lithuania	1962	yes	yes	-
Luxembourg	-		1985	
Malta	-	-	-	-
Netherlands	no[9]	yes	yes	-
Poland	1961	1999[10]	-	-
Portugal	yes	yes	yes	-
Slovakia	yes	2004	yes[4]	2000
Slovenia	1949	1991[11]	1991[11]	2003
Spain	1982	1994	1994	1994
Sweden	1968	1961	1961	1961
United Kingdom	no	1989[12]	1989[12]	no
Norway	1975	1965	1965	1995[13]
Switzerland	yes	1966	1966	-

1. In Austria, notifiable since 14 April 1913, re-proclaimed 12 June 1947, adapted on 28 April 1950
2. In Austria, clinical cases notifiable since 1996
3. In Austria, detection of *S.* Enteritidis, *S.* Typhimurium, *S.* Pullorum and *S.* Gallinarum notifiable in breeding animals
4. Clinical cases notifiable
5. In Estonia, *S.* Enteritidis, *S.* Typhimurium, *S.* Dublin, *S.* Newport and *S.* Cholerasuis are notifiable
6. In Finland, notifiable also before 1995, but legislation changed in 1995
7. In France, in breeding flocks and laying hens, *S.* Enteritidis and *S.* Typhimurium, only (2006)
8. In Ireland, reportable by FBO to competent authority under SI 154/2004 - European Communities (Monitoring of Zoonoses) Regulations 2004
9. In the Netherlands, only notifiable if the patient is working in the food industry or Horeca, work with treatment or nursing of other persons, or belongs to a group of two or more persons which eat/drink the same food within a period of 24 hours
10. In Poland, *S.* Enteritidis, *S.* Typhimurium, *S.* Pullorum and *S.* Gallinarum are notifiable in poultry
11. In Slovenia, the year of independence, however this disease was notifiable before 1991
12. Reportable diseases (in animals) are those where there is a statutory requirement to report laboratory confirmed isolation of organisms of the genus *Salmonella* under the Zoonoses Order 1989
13. In Norway, only those detected in the national control programme

Appendix Table CA1. Campylobacter monitoring, surveys and diagnostic methods used for humans animals and food, 2007

Country	Human Sample type	Diagnostic	*Gallus gallus* Sample type	Diagnostic
Austria	Faecal	Bacteriology	At slaughter: Caeca	Bacteriology, ISO 10272-1:2006(E)
			Cattle and pig: Colon	Bacteriology (in cattle at first enrichment)
Belgium	-	-	At slaughter: Caeca	-
Bulgaria				
Cyprus	-	-	-	-
Czech Republic	-	-	At slaughter: cloacal swaps	ISO 10272:1997
Denmark	Faecal	Bacteriology	At slaughter: cloacal swaps	PCR
Estonia	Faecal	Bacteriology	At slaughter: Caeca	ISO 10272
Finland	-	Bacteriology	At slaughter: Caeca	NMKL 119:1990 w/no enrichment
France	Faecal	Bacteriology	At slaughter: Caeca	Multiplex PCR
Germany	-	-	At slaughter: Caeca	ISO 10272
Greece	-	-	-	-
Hungary	Faecal	Bacteriology	-	-
Ireland	-	-	Carcass	Bacteriology
Italy	-	-	At slaughter: Cloacal swaps (Veneto region)	Bacteriology
Latvia	-	-	At the farm before slaughter: cloacal swabs	OIE Manual chapter 2.10.8.B.1.
Lithaunia	-	Bacteriology	At slaughter: cloacal and neck skin	Bacteriology
Luxembourg	-	-	Meat	Vidas, conf. Bacteriology
Netherlands	-	-	-	-
Poland	Faecal	Bacteriology	-	-
Portugal	-	-	-	-
Romania				
Slovakia	Stool or blood	Bacteriology	-	-
Slovenia	Faeces and blood	Bacteriology	At slaughter: Caeca	ISO 10272:1995, modified
Spain	-	Bacteriology	Rearing; at farm, before slaughter; at slaughter: Faeces	ISO 10272
Sweden	Faeces and blood	Bacteriology	At slaughter: Caeca	ISO 10272
United Kingdom	Faecal	Bacteriology	At slaughter - caeca and neck skin	ISO 10272
Norway	Faecal	Bacteriology	At the farm, before slaughter: Faeces At slaughter: Caeca	At the farm, before slaughter: PCR At slaughter: NMKL 119:1990 (without enrichment)
Switzerland	-	-	At slaughter: Cloacal swaps	Bacteriology

Broiler meat Sample type	Diagnostic	Other food Sample type	Diagnostic
At slaughter: Carcass. At processing/retail: Fresh and meat products	Bacteriology, ISO 10272-1:2006(E)	Retail: raw milk, cheeses made from raw milk	ISO 10272:1995 or enrichment method
At slaughter/processing/ retail: Carcass, cut and meat preparation	SP-VG-M003 (enrichment, bacteriology and PCR)	Pork at slaughter/processing/ retail: Carcass and minced meat	SP-VG-M003 (enrichment, bacteriology and PCR)
-	-	-	-
At slaughter: Carcass At processing/retail: Fresh and meat products	ISO 10272:1995	Retail: Cheeses	ISO 10272:1995
At processing/retail: Depends on survey	-	-	-
At slaughter: neck skin At retail: Fresh meat and meat preparation	Slaughter/processing: ISO 10272:1995 Retail: NMKL 119: 1990	Pig meat and bovine meat at retail	Retail: NMKL 119:1990
At slaughter: neck skin	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
At slaughter: Fresh meat At retail: Fresh meat and meat products	ISO 10272:1995	-	-
At processing/retail: Depends on survey	-	-	-
Meat	Vidas/bacteriology	Meat	Vidas/bacteriology
at retail	ISO 10272:2006	raw meat at retail; turkey at retail	ISO 10272:2006
-	-	-	-
-	-	-	ISO 10272, typing by Lior method
-	-	-	ISO 10272
At slaughter: Fresh meat At retail: Fresh meat	ISO 10272:1995	Pig meat and meat from bovine. At retail: Cheeses, sour milk	ISO 10272:1995
At slaughter/processing/ retail: Fresh meat and skin	ISO 10272:2006	-	-
At retail	NMKL 119:1990	-	NMKL 119:1990, ISO 10272, PCR
At retail: Fresh refrigerated meat	ISO 10272:1995	-	-
At retail: Fresh meat	NMKL 119:1990	-	-
At retail: Fresh meat	Swiss food manual	-	-

Appendix Table CA2. Notification on Campylobacter *in humans, animals and food, 2007*

Country	Notifiable in humans since	Notifiable in animals since	Notifiable in food since
Austria	1996	no	1975
Belgium	2000	1998	2004
Cyprus	2005	-	-
Czech Republic	yes	no	yes
Denmark	1979	no	no
Estonia	1988	2000	yes[1]
Finland	1995	2004[2]	no[3]
France	2002	-	-
Germany	no	-	-
Greece	yes	no	no
Hungary	1998	no	no
Ireland	2004	1992	not notifiable[4]
Italy	1990	no	1962
Latvia	1999	yes[5]	2004
Lithuania	1990	>30 years	-
Luxembourg	-	no	-
Malta	-	-	-
Netherlands	yes	yes	yes
Poland	2004	-	-
Portugal	-	no	-
Slovakia	1980's	no	2000
Slovenia	1987	no	2003
Spain	1989	1994	1994
Sweden	1989	no	no
United Kingdom	no	no	no
Norway	1991	yes[6]	yes[6]
Switzerland	yes	1966	no

1. In Estonia, only *C. jejuni*
2. In Finland, *Campylobacter* notifiable in *Gallus gallus* only
3. In Finland, the food business operator has to notify the competent authority, but there is no central notification system
4. In Ireland, reportable by FBO to competent authority under SI 154/2004 - European Communities (Monitoring of Zoonoses) Regulations 2004
5. In Latvia, only clinical cases notifiable
6. In Norway, only positive samples from *Gallus gallus* detected in the national control programme

Appendix Table LI1. Monitoring programmes and diagnostic methods for **Listeria monocytogenes***, 2007*

Country	Surveillance	Frequency and type of samples
Austria	No monitoring programme. Surveys by the local authorities	-
Belgium	Monitoring programme started in 2004	Fresh meat and final products sampled weekly
Bulgaria		
Cyprus	-	-
Czech Republic	Monitoring according to the Decree of the Ministry of Health No. 132/2004 Coll	-
Denmark	No monitoring programme Surveys by the local authorities	-
Estonia	No monitoring programme Surveys by the local authorities	Random sampling
Finland	Survey on vegetables	Random sampling
France	Monitoring programme on meat products	Random sampling
Germany	Monitoring, surveys and own-control	-
Greece	No monitoring programme Surveys by the local authorities	Routine and target sampling
Hungary	Monitoring milk products (EU requirements) based on Directive 92/46	-
Ireland	-	-
Italy	-	-
Latvia	No monitoring programme for animals State surveillance programme for food	Random sampling
Lithuania	-	-
Luxembourg	-	Meat +meat products
Malta	Survey on cheese	-
Netherlands	Survey on raw meat; survey on smoked fish	Random sampling
Poland	-	-
Portugal	Surveillance in raw milk and milk cheese	-
Romania		
Slovakia	No monitoring programme Surveys by the local authorities	-
Slovenia	Surveys by the local authorities At retail: annual monitoring programme	-
Spain	-	-
Sweden	No official programme Surveys by the local authorities	Depend on survey
United Kingdom	No monitoring programme National and regional surveys by the local authorities	Depend on survey
Norway	No monitoring programme. Surveys. Obligatory own-check of certain products of milk and fish	Depend on survey

HACCP	Diagnostic method	Human diagnostic	Survey on cheeses from raw and thermised milk
yes	ISO 11290-1:1996 (E):1996,1998	Isolation of *L. monocytogenes* from blood, cerebral spinal fluid, vaginal swabs	-
-	Afnor validated VIDAS LMO2 followed by a chromogenic medium	-	-
-	-	-	-
yes	ISO 11290-1:1996 (E):1996,1998	-	yes
-	-	Bacteriology	yes
-	NMKL 136, 2004 ISO 11290-1:1996 (E):1996,1998	Isolation of *L. monocytogenes* from blood and cerebral spinal fluid	-
-	ISO 11290-1:1996 (E):1996,1998	Bacteriological culture	
yes	Bacteriological culture	Isolation of *L. monocytogenes* from blood and cerebral spinal fluid.	no
-	-	Isolation of *L. monocytogenes* from blood and cerebral spinal fluid	-
-	-	-	-
-	-	Isolation of *L. monocytogenes* from blood and cerebral spinal fluid	-
-	Bacteriological culture	-	-
yes	-	-	-
yes	ISO 11290-1:1996 (E):1996,1998	Microbiological identification	-
-	-	Isolation of *L. monocytogenes* from blood and cerebral spinal fluid	-
-	BRD:07/04-09/98+ BRD:07/05-09/01	-	-
-	-	-	-
-	ISO 11290	-	-
-	-	Isolation of *L. monocytogenes* from blood and cerebral spinal fluid, articular or pericardial fluid	-
-	ISO 11290	-	-
-	ISO 11290	Isolation of *L. monocytogenes*	-
yes	ISO 11290-1:1996 (E):1996,1998	Isolation of *L. monocytogenes*	yes
-	-	Isolation of *L. monocytogenes* from a normally sterile site	-
surveys	NMKL 136:2004, SLO METHOD	Isolation of *L. monocytogenes* from blood and cerebral spinal fluid	-
surveys	BS EN ISO 11290	culture	yes
yes	NMKL 136	Isolation of *L. monocytogenes* from a normally sterile site.	-

Appendix Table LI2. Notification of Listeria *in humans, animals and food, 2007*

Country	Notifiable in humans since	Notifiable in animals since	Notifiable in food since
Austria	1947[1]	no	1975
Belgium	< 1999[2]	1998	2004
Cyprus	2005	-	-
Czech Republic	yes	no	-
Denmark	1993	no	-
Estonia	2003	2000	2000
Finland	1995	1995[3]	no[4]
France	1998	no	1994
Germany	yes	yes	-
Greece	yes	1980	-
Hungary	1998	no	2003
Ireland	2004	-	not notifiable[5]
Italy	1990	no	1962
Latvia	1990	yes	2003
Lithuania	1998	>30 years	-
Luxembourg	-	no	no
Malta	yes	-	-
Netherlands	no	yes	yes
Poland	1966	-	-
Portugal	yes	no	-
Slovakia	yes	yes	2000
Slovenia	1977	>1991[6]	2003
Spain	1982	1994	1994
Sweden	1969[7]	yes	no
United Kingdom	no	no	no
Norway	1975	1965	no
Switzerland	yes	1966	-

1. In Austria, notifiable since 14 April 1913, re-proclaimed 12 June 1947, adapted on 28 April 1950
2. In Belgium, in the Flemish Community
3. In Finland, notifiable also before 1995, but legislation changed in 1995
4. In Finland, food business operator has to notify the competent authority, but there is no central notification system
5. In Ireland, reportable by FBO to competent authority under SI 154/2004 - European Communities (Monitoring of Zoonoses) Regulations 2004
6. In Slovenia, the year of independence, however this disease was notifiable before 1991
7. In Sweden, only clinical cases notifiable

Appendix Table TB-BR1. Status as officially free of bovine brucellosis (OBF), officially free of* B. melitensis *in sheep and goats (ObmF) and officially free of bovine tuberculosis (OTF)

Country	Bovine brucellosis		*Brucella melitensis*		Bovine tuberculosis	
	OBF[1] since	Comments	ObmF[2] since	Comments	OTF[1] since	Comments
Austria	1999	-	2001	-	1999	
Belgium	2003	No cases since 2000	2001	-	2003	
Bulgaria	no	No cases since 1958			no	
Cyprus	no	Never detected in domestic animals, imported cases in 1921 and 1932	no	Eradication programme.	-	
Czech Republic	2004	Eradication programme terminated in 1964	2004	Never detected	2004	Eradication programme terminated in 1967
Denmark	1980	No cases since 1962	1979	Never detected	1980	
Estonia	no	No cases since 1961	no	No cases since 1962, surveillance of breeding herds		No cases since 1986
Finland	1994	No cases since 1960	1994	Never detected	1994	
France	2005	-	2001 (64 departements)	-	2000	
Germany	2000	-	2000	-	1997	
Greece	no	Eradication programme. Thessaloniki area is eradication and vaccination area for Bovine brucellosis, only	no	Eradication programme on islands, vaccination on the mainland	-	
Hungary	no	Declared free by OIE in 1985	2004	Never detected	no	
Ireland	no	No confirmed case since April 2006	1993	Never detected	no	
Italy	yes (20 provinces and 7 regions)	Vaccination in two areas (Monti Nebrodi in Sicily and Caserta in Campania)	yes (5 provinces and 8 regions)	Vaccination in Sicily	yes (15 provinces and 3 regions)	
Latvia	no	No cases since 1963	no	Never detected		No cases since 1989
Lithuania	no	Yes, according to OIE demands	no	Yes, according to OIE demands	no	
Luxemburg	1999	No cases since 1999	yes	-	1996	
Malta	no	No cases since 1996	no	No cases since 1996	-	
Netherlands	1996	-	1993	Never detected	yes	
Poland	no	-	yes	Surveillance of breeding herds, *B. Melitensis* never detected	no	

Appendix Table TB-BR1. Status as officially free of bovine brucellosis (OBF), officially free of* B. melitensis *in sheep and goats (ObmF) and officially free of bovine tuberculosis (OTF) (contd.)

Country	Bovine brucellosis		*Brucella melitensis*		Bovine tuberculosis	
	OBF[1] since	Comments	ObmF[2] since	Comments	OTF[1] since	Comments
Portugal	2002 (Azores)	Eradication programme, vaccination in exceptional situations	2002 (Azores)	Eradication programmes, regional vaccination	no	
Romania			yes			
Slovakia	2005		2004	-	2005	
Slovenia	yes	No cases since 1961	2005			No cases since 1997
Spain	no	Eradication programmes, vaccination in high risk areas	2001 (Canaries)	Eradication programmes, vaccination in high risk areas	no	
Sweden	1995	No cases since 1957	1994	-	1995	
United Kingdom	1985 (GB)	Northern Ireland not officially free	1991	Never detected	no	
Norway	1994	Declared eliminated in 1953	1994	Never detected	1994	
Switzerland	1959	-	1998	-	1959	

1. OBF and OTF according to Directive 64/432/EC and Decision 2003/467/EC as last amended by Decision 2007/559/EC
2. ObmF according to Directive 91/68/EC and Decision 93/52/EC, as last amended by Decision 2007/399/EC

Appendix Table TB1. Notification of tuberculosis in humans, Gallus gallus, *other animals and food, 2007*

Country	Notifiable in humans since	Notifiable in *Gallus gallus* since	Notifiable in other animals since	Notifiable in food since
Austria	1947/2004[1]	-	1909/1999[1]	-
Belgium	< 1999	1998	1963	2004
Cyprus	1932	-	-	-
Czech Republic	yes	yes	yes	-
Denmark	1905	1993	1920[2]	-
Estonia	1950	1962	1962	no
Finland	1995[3]	1995[3]	1902	1902
France	yes	-	1934	-
Germany	yes	yes	yes	-
Greece	yes	-	1936 (bovine)	-
Hungary	1946	no	yes (bovine)	no
Ireland	1948	-	1966 (Cattle), 1992 (Other ruminant animals)	not notifiable[4]
Italy	1990	-	1954	1928
Latvia	yes	yes	1927	-
Lithuania	1990	yes	yes	-
Luxembourg	-	-	1912	-
Malta	-	-	-	-
Netherlands	yes	no	yes	-
Poland	1919	-	-	-
Portugal	yes	yes	yes	-
Slovakia	yes	no	yes	-
Slovenia	1949	-	>1991[5]	2003
Spain	1948	-	1952	1952
Sweden	>30 years ago	yes	yes	-
United Kingdom	yes	no	>1984[6]	-
Norway	1900	1965	1894	1894[7]
Switzerland	yes	1950	1950	-

1. In Austria, *M. bovis* notifiable since 2004 in humans and since 1999 in animals, *M. tuberculosis* notifiable since 1947 in humans and since 1909 in animals
2. In Denmark, only clinical cases are notifiable
3. In Finland, notifiable also before 1995, but legislation changed in 1995
4. In Ireland, reportable by FBO to competent authority under SI 154/2004 - European Communities (Monitoring of Zoonoses) Regulations 2004
5. In Slovenia, the year of independence. The disease was notifiable before 1991
6. In The United Kingdom, the first TB Orders were passed in 1913 and 1925 to remove clinically ill cattle. In deer, TB has been notifiable since 1 June 1989. In 2005, TB became notifiable in all mammals except man
7. In Norway, mandatory meat inspection at slaughterhouse

Appendix Table BR1. Notification of Brucella in humans, animals and food, 2007

Country	Notifiable in humans since	Notifiable in animals since	Notifiable in food since
Austria	1947[1]	1957	1975
Belgium	< 1999	1978	2004
Bulgaria			
Cyprus	1983	-	-
Czech Republic	yes	yes	-
Denmark	no[2]	1920[3]	-
Estonia	1947	1962	no
Finland	1995	1920's	1920's
France	1960[4]	1965	-
Germany	yes	yes	-
Greece	yes	1972	-
Hungary	1950	1928	no
Ireland	1948	1966 (Cattle), 1992 (Other ruminant animals)	Not notifiable[5]
Italy	1990	1954	1929
Latvia	1974	1927	-
Lithuania	1957	>30 years	-
Luxembourg	-	1948	-
Malta	-	-	-
Netherlands	yes	yes	yes
Poland	1946	1951	-
Portugal	yes	yes	-
Romania			
Slovakia	yes	no	no
Slovenia	1977	<1991[6]	2003
Spain	1943	1952	1952
Sweden	2004	yes	no
United Kingdom	1996[7]	1971[8]	1989
Norway	1975	1903	no
Switzerland	yes	1966	-

1. In Austria, notifiable since 14 April 1913, re-proclaimed 12 June 1947, adapted on 28 April 1950
2. In Denmark, only imported cases registered centrally
3. In Denmark, only clinical cases are notifiable
4. In France, mainly imported cases
5. In Ireland, reportable by FBO to competent authority under SI 154/2004 - European Communities (Monitoring of Zoonoses) Regulations 2004
6. In Slovenia, the year of independence. The disease was notifiable before 1991
7. In the United Kingdom, reportable under Reporting of Injuries, Disease and Dangerous Occurrences Regulations – applies to all work related activities but not to all incidents
8. In the United Kingdom organisms of the genus *Brucella* are reportable in animals - ie there is a statutory requirement to report laboratory confirmed isolation of the organism

Appendix Table RA1. Vaccination programmes for rabies in animals, 2007)

Country	Vaccination programmes in pets	Vaccination programmes in wildlife
Austria	Voluntary vaccination of pets	Since 1991, oral vaccines distributed to foxes twice a year. The programme is approved and co-financed by EU (Decision 2005/873/EC)
Bulgaria	Compulsory vaccination of dogs	-
Belgium	Compulsory vaccination of dogs and cats in the south and if staying at public campgrounds	Oral vaccines were distributed from 1989 to 2003
Cyprus	Compulsory vaccination of animals entering Cyprus	-
Czech Republic	Compulsory vaccination of carnivores in captivity	In 1989, oral vaccination of foxes in some districts. In 2003, the whole country is covered except for rabies free districts. Since 2004, vaccination twice a year by air in selected areas, mainly along the border with Poland and Slovakia. The programme is approved and will be co-financed by the EU (Decision 2005/873/EC)
Denmark	-	-
Estonia	Compulsory vaccination of dogs and cats	In autumn 2005 oral vaccination of wildlife in the northern part of the country. Since 2006 oral vaccines distributed to foxes twice a year by airplane. The programme is approved and co-financed by the EU (Decision 2005/873/EC)
Finland	Vaccination in dogs and cats are recommended	Since 1991, oral vaccines distributed to foxes and racoon dogs twice a year along the Russian border by flight. Since 2004, oral vaccines distributed to foxes twice a year. The programme is approved and co-financed by the EU (Decision 2005/873/EC)
France	-	-
Germany	Voluntary vaccination of pets, compulsory vaccination of animals used for hunting	Oral vaccines distributed to foxes twice a year in endemic areas. The programme is approved and co-financed by the EU (Decision 2005/873/EC)
Greece	Compulsory vaccination of dogs and cats	-
Hungary	Compulsory vaccination of dogs, voluntary vaccination of cats	Since 2004, oral vaccines distributed to foxes twice a year by flight. The programme started in 1997
Ireland	-	-
Italy	-	Oral vaccines distributed to foxes in the Region Friuli Venezia Giulia
Latvia	Compulsory vaccination of dogs, cats and pet ferrets	Since 1998, oral vaccines distributed to foxes and raccoon dogs twice a year, from 2005, by flight. The programme is approved and co-financed by the EU (Decision 2005/873/EC)
Lithuania	Compulsory vaccination of dogs and cats	Since 1995, Oral vaccines distributed to foxes twice a year by flight. The programme is approved by the EU (Decision 2005/873/EC), but not co-financed (Decision 2006/912/EC)
Luxembourg	-	-
Malta	-	-
Netherlands	-	-
Poland	Vaccination programme for dogs since 1949	Since 2002, oral vaccines distributed to foxes twice a year by flight. The programme is approved and co-financed by the EU (Decision 2005/873/EC)

Appendix Table RA1. Vaccination programmes for rabies in animals, 2007 (contd.)

Country	Vaccination programmes in pets	Vaccination programmes in wildlife
Portugal	Compulsory vaccination of dogs since 1925	-
Romania	Compulsory vaccination of dogs and cats	In 2006, oral vaccines were distributed manually in restricted areas
Slovakia	Compulsory vaccination of domestic carnivores	Since 1994, oral vaccines distributed to foxes twice a year by flight. The programme is approved and co-financed by the EU (Decision 2005/873/EC)
Slovenia	Compulsory vaccination of dogs since 1947	Oral vaccines distributed to foxes twice a year by flight. The programme is approved and co-financed by the EU (Decision 2005/873/EC)
Spain	Compulsory vaccination of dogs in ten regions, Ceuta and Melilla, voluntary in the remaining of the country	From 2004, compulsory surveillance according to Directive 2003/99/EC
Sweden	Vaccination of dogs and cats being brought in and out of the country	-
United Kingdom	Vaccination is permitted those animals being exported, and those undergoing quarantine	-
Norway	Vaccination of dogs and cats being brought in and out of the country	-
Switzerland	Compulsory vaccination of dogs brought in to the country from countries not free from rabies	-

Appendix Table RA2. Type of samples and diagnostic methods used when diagnosing rabies in humans and animals, 2007

Country	Humans		Animals	
	Type of sample	Diagnostic test	Type of sample	Diagnostic test
Austria	Liquor, smears from pharynx, swab from conjuntivae, biopsy at the nape of the neck and serum	FAT, immunohistochemistry, RT-PCR	Brain	Fluorescent antibody test (FAT), rabies tissue culture infection test (RT-CIT). Mouse inoculation test (MIT)
Belgium	Blood, cerebrospinal fluid, saliva, *post mortem* brain tissue	Antigen detection, Virus isolation in neuroblastoma cells, RT-PCR, Virus isolation in mice; Rapid Fluorescent Focus Inhibition test RFFIT.	Brain	FAT, virus cultivation in neuroblast
Bulgaria	-	-		Direct immune-flourescent test (IFT)
Cyprus	-	-	Brain	Hellers stain
Czech Republic	-	-	Brain	FAT
Denmark	Blood samples, skin biopsy from neck	-	Brain	FAT, virus isolation
Estonia	-	-	Brain	FAT
Finland	-	Human: cultivation, serology, antigen-test, direct microscopy.	Brain	FAT, cell culture, RT-PCR
France	Cerebrospinal fluid, blood, saliva, if *post mortem*: brain tissue	PCR, FAT, immunohistochemistry, direct microscopy, RFFIT	Brain	FAT, cell culture, RT-PCR, MIT, FAVN
Germany	-	-	-	FAT, cell culture
Greece	-	-	-	-
Hungary	Cerebrospinal fluid, blood	In vivo from cornea imprint of the patient by immunofluorescence method, or determination of specific antibody titre of the blood or liquor by immunofluorescence method during the second week of the illness. Post mortem: detection of the Negri-body in the brain tissue, or the antigen by immunofluorescence method, or identification of the viral genetic material by PCR, or isolation of the virus in mouse.	-	-
Ireland	-	-	-	-
Italy	-	-	Brain	FAT
Latvia	-	ELISA	Brain	FAT, MIT
Lithuania	Cerebrospinal fluid, saliva	Isolation of virus, antigen detection, mouse inoculation test, ELISA, PCR.	-	-
Luxembourg	-	-	Brain	FAT, virus isolation (by sub-contractance)

Appendix Table RA2. Type of samples and diagnostic methods used when diagnosing rabies in humans and animals, 2007 (contd.)

Country	Humans		Animals	
	Type of sample	Diagnostic test	Type of sample	Diagnostic test
Malta	-	-	-	-
Netherlands	-	-	-	-
Poland	Cerebrospinal fluid, blood, saliva, if *post mortem*: brain tissue	FAT, RT-PCR, MIT, RFFIT	Brain	FAT, MIT, RFFIT
Portugal	-	-	-	Direct immune-flourescent test (IFT)
Romania				
Slovakia	Cerebrospinal fluid, saliva, serum, brain tissue	Isolation of virus, antigen detection, detection of virus nucleic acids, virus neutralization assay	-	FAT, ELISA, RT-PCR, MIT, FAVN
Slovenia	Cerebrospinal fluid, saliva, if *post mortem*: brain tissue	Serology, isolation on cell cultures, mouse inoculation test, RT-PCR, FAT	Brain	Serology, isolation on cell cultures, mouse inoculation test, RT-PCR, FAT
Spain	Cerebrospinal fluid, blood, skin biopsy from neck	FAT, RFFIT, MIT, PCR	Brain tissue/blood	FAT, ELISA
Sweden	Serum, CSF	Serology, antigen detection, isolation of virus, PCR	Brain tissue	FAT, MIT, PCR, virus isolation
United Kingdom	Cerebrospinal fluid, blood, saliva	Serology, antigen detection, isolation of virus	Brain tissue	FAT, MIT, histology, PCR
Norway	Cerebrospinal fluid, serum, if *post mortem*: brain tissue	Serology, antigen detection, virus isolation	Brain tissue	FAT, MIT, RTCIT, PCR
Switzerland	-	RFFIT	-	FAT, RTCIT, RFFIT

Appendix Table RA3. Notification of rabies in humans and animals, and Official Rabies Free status, 2007

Country	Notifiable in humans since	Last indigenous case	Notifiable in animals since	Last case	Rabies status	Since
Austria	1947		1957			
Belgium	<1999	1923	1883	1999	Declared itself free from rabies[1]	2001
Bulgaria	-		-			
Cyprus	2004	<1976	yes	<1976	Rabies free	
Czech Republic	yes		1999	2002	Declared itself free from rabies[1]	2005
Denmark	1964		1920	1982 (classical rabies)		
Estonia	1946	1987	1950			
Finland	1995		1922	1989	Declared itself free from rabies[1]	1991
France	yes		yes		Declared itself free from rabies[1]	2001
Germany	yes		yes			
Greece	yes	1970	1936	1987	Rabies free	
Hungary	1950		1928			
Ireland	1976		-		Declared itself free from rabies[1]	
Italy	1990	1995	1954			
Latvia	1974	2003	yes			
Lithuania	1957		<1975			
Luxembourg	-		-		Declared itself free from rabies[1]	2003
Malta	-		-		Rabies free since 1911	
Netherlands	yes		yes (dogs)			
Poland	1919		1927			
Portugal	-		1953	1961		

1. According the criteria set up by the OIE; where a country with no new cases of rabies during a two year period may declare itself free from rabies. The criteria excludes European Bat *Lyssavirus*
2. In Slovenia, the year of independence. However, this disease was notifiable before 1991
3. In Spain, the mainland and islands not Ceuta and Melilla
4. In Norway, in the archipelago of Svalbard

Appendix Table RA3. Notification of rabies in humans and animals, and Official Rabies Free status, 2007 (contd.)

Country	Notifiable in humans since	Last indigenous case	Notifiable in animals since	Last case	Rabies status	Since
Romania	-		-			
Slovakia	yes	1990	1950			
Slovenia	1949	1950	<1991[2]			
Spain	1901	1975	1952	1978[3]	The mainland and islands are considered rabies free	
Sweden	<1975	1886	yes	1886	Rabies free since 1886	
United Kingdom	yes	1902	yes	1922	Declared itself free from rabies[1]	
Norway	1975	1815	1965	1999[4]	Declared itself free from rabies (the mainland)	
Switzerland	1952	1974	1952	1996	Declared itself free from rabies[1]	1998

1. According the criteria set up by the OIE; where a country with no new cases of rabies during a two year period may declare itself free from rabies. The criteria excludes European Bat *Lyssavirus*
2. In Slovenia, the year of independence. However, this disease was notifiable before 1991
3. In Spain, the mainland and islands not Ceuta and Melilla
4. In Norway, in the archipelago of Svalbard

Appendix Table VT1. Notification of VTEC in humans, animals and food, 2007

Country	Notifiable in humans since	Notifiable in animals since	Notifiable in food since
Austria	1950[1,2]	no	1975
Belgium	< 1999	2005	2004
Cyprus	2005 (EHEC)	-	-
Czech Republic	yes	no	-
Denmark	2000 + HUS (EHEC)	no	-
Estonia	1958 (EHEC)	2000	2000
Finland	1998	2004[3]	no[4]
France	1996 (HUS)	-	-[5]
Germany	yes	-	-
Greece	yes (EHEC)	-	-
Hungary	1998	no	-
Ireland	2004 (EHEC)	-	not notifiable[6]
Italy	1990	no	1962
Latvia	1999	yes[7]	2004
Lithuania	2004	>30 years	-
Luxembourg	-	no	no
Malta	-	-	-
Netherlands	yes	no	yes
Poland	2004	-	-
Portugal	-	-	-
Slovakia	yes	no	2000
Slovenia	1995	no	2003
Spain	1989[8]	1994	1994
Sweden	2004[9]	yes[10]	no
United Kingdom	no	no	no
Norway	1995	no[11]	no[11]
Switzerland	1999	no	-

1. In Austria, notifiable since 14 April 1913, re-proclaimed 12 June 1947, adapted on 28 April 1950
2. In Austria, clinical cases notifiable since 1996
3. In Finland, only notifiable in cattle
4. In Finland, food business operator has to notify the competent authority, but there is no central notification system
5. In France, the food business operators have to notify the competent authority when contaminated products are on the market
6. In Ireland, reportable by FBO to competent authority under SI 154/2004 - European Communities (Monitoring of Zoonoses) Regulations 2004
7. In Latvia, only clinical cases notifiable
8. In Spain, microbiological information system
9. In Sweden, VTEC O157 infection have been notifiable since 1996, since 2004 all clinical VTEC have been notifiable
10. In Sweden, infections with VTEC associated with human cases of EHEC
11. Notification required when further transmission to humans is suspected or has occurred

Appendix Table YE1. Notification on Yersinia *in humans, animals and food, 2007*

Country	Notifiable in humans since	Notifiable in animals since	Notifiable in food since
Austria	1947[1,2]	no	1975
Belgium	<1999[3]	1998	2004
Bulgaria			
Cyprus	2005[4]	-	-
Czech Republic	yes	no	-
Denmark	1979	no	-
Estonia	1982	no	2000
Finland	1995	no	no[5]
France	yes	-	-
Germany	yes	-	-
Greece	-	-	-
Hungary	1998	no	-
Ireland	2004	1992	not notifiable[6]
Italy	1990	no	1962
Latvia	1988	yes[7]	-
Lithuania	1985	>30 years	-
Luxembourg	-	no	no
Malta	-	-	-
Netherlands	no	yes	yes
Romania			
Poland	2004	-	no
Portugal	-	no	-
Slovakia	yes	no	2000
Slovenia	1977	no	2003
Spain	1989[8]	1994	1994
Sweden	1996	no	no
United Kingdom	no	no	no
Norway	1992	no	no
Switzerland	yes	1966	-

1. In Austria, notifiable since 14 April 1913, re-proclaimed 12 June 1947, adapted on 28 April 1950
2. In Austria, clinical cases notifiable since 1996
3. In Belgium, in the Flemish Community
4. In Cyprus, notifiable since January 2005
5. In Finland, food business operator has to notify the competent authority, but there is no central notification system
6. In Ireland, reportable by FBO to competent authority under SI 154/2004 - European Communities (Monitoring of Zoonoses) Regulations 2004
7. In Latvia, only clinical cases are notifiable
8. In Spain, microbiological information system

Appendix Table TR1. Diagnostic methods and monitoring programmes for Trichinella*, 2007*

Country	Humans Diagnostic methods	Animals Diagnostic methods
Austria	Serology (ELISA), Western Blot	Regulation (EC) No 2075/2005
Belgium	Serology (ELISA), histopathology	Regulation (EC) No 2075/2005
Bulgaria		Compression method
Cyprus	EU recommendations	Directive 77/96/EC (digestion method)
Czech Republic	-	Pepsin digest method according to Regulation (EC) No 2075/2005
Denmark	Serology, histopathology	Pepsin digest method according to Regulation (EC) No 2075/2005
Estonia	Clinical symptoms, eosinophilia	Pepsin digest method according to Regulation (EC) No 2075/2005
Finland	Serology, histopathology	Regulation (EC) No 2075/2005
France	Serology, histopathology	Digestion method
Germany	Serology (ELISA), histopathology	Directive 77/96/EC (digestion or compression method) and PCR
Grece	-	Directive 77/96/EC (digestion or compression method)
Hungary	Serology (ELISA), histopathology, Western Blot	Pepsin digest method according to Regulation (EC) No 2075/2005
Ireland	-	Pepsin digest method according to Regulation (EC) No 2075/2006
Italy	-	Regulation (EC) No 2075/2005
Latvia	Serology (ELISA)	Pepsin digest method according to Regulation (EC) No 2075/2005
Lithuania	Serology, (ELISA)	-
Luxembourg	-	Regulation (EC) No 2075/2005 (digestion method)
Malta	-	Compression method
Netherlands	-	Directive 77/96/EC (digestion method)
Poland	Serology and histopathology	Pepsin digest method according to Regulation (EC) No 2075/2005
Portugal	-	Pepsin digest method according to Regulation (EC) No 2075/2005
Romania	Serology, (ELISA)	Pepsin digest method according to Regulation (EC) No 2075/2005
Slovakia	Serology, histopathology	Pepsin digest method according to Regulation (EC) No 2075/2005
Slovenia	Serology, histopathology	Pepsin digest method according to Regulation (EC) No 2075/2005
Spain	Decision no. 2002/253/EC - serology, histopathology	Pepsin digest and compression method according to Regulation (EC) No 2075/2005
Sweden	Serology (ELISA/IFL)	Pepsin digest method according to Regulation (EC) No 2075/2005
United Kingdom	Histopathology	Pepsin digest method according to Regulation (EC) No 2075/2005
Norway	Serology and histopathology	Directive 77/96/EC (digestion or compression method)
Switzerland	-	Directive 77/96/EC (digestion method)

Animals - monitoring programmes Meat inspection at slaughter	Other monitoring
Pigs, horses, farmed wild boar	Wild boar: monitoring scheme
Pigs, horses, wild boar	Other wildlife monitored when relevant
Pigs, horses, wild boar, bears, badgers	-
Pigs (started in 2004, 80% examined)	-
Pigs, horses, wild boar	Other wildlife monitored when relevant
Pigs and horses slaughtered at export approved slaughter houses, all wild boar	-
Pigs, horses, wild boar	Other wildlife monitored when relevant
Pigs, horses, wild boar, bears	Other wildlife monitored when relevant
Pigs, horses	Wild boar: sampling are carried out as a survey
Pigs, horses, wild boar	Other wildlife monitored when relevant
Pigs	-
Pigs, horses, wild boar	Other wildlife monitored when relevant
Pigs, horses, farmed wild boar	Wildlife monitoring programme covering foxes, badgers and rodents
Pigs	-
Pigs, horses, wild boar	Slaughtering at home is allowed only for personal consumption. In this case the owner is responsible for ensuring control
-	-
Pigs, horses, wild boar	
Horses	Pigs: random on the slaughter line
Pigs, horses	
Pigs, horses, wild boar	-
Pigs, horses, wild boar	Priority: wild boar, breeding pigs and pigs not raised under controlled housing condition
Pigs, horses, wild boar	-
Pigs, horses, wild boar	Other wildlife monitored when relevant
Pigs, horses, wild boar	Other wildlife monitored when relevant. Testing of pigs slaughtered on the holding of origin for private domestic consumption is not mandatory
Pigs, horses, wild boar	Home slaughtering. Other wildlife monitored when relevant
Pigs, horses, wild boar, bears	Survey of approx. 300 foxes annually, other wildlife monitored when relevant
Pigs, horses, farmed wild boar	Foxes, approximately 400-700 annually
Pigs, horses, wild boar, bears	Wildlife and farmed foxes occasionally
Pigs, horses, wild boar	Survey of foxes in 2006-2007, other wildlife monitored when relevant

Appendix Table TR2. Notification of Trichinella *in humans, animals and food, 2007*

Country	Notifiable in humans since	Notifiable in animals since		Notifiable in food since
Austria	1950	1994	Pigs, horses, wild boar	1994
Belgium	<1999[1]	1998	-	2004
Bulgaria				
Cyprus	2005	yes	Pigs	-
Czech Republic	yes	yes	Pigs, horses, wild boar, other wildlife	-
Denmark	no	1920[2]	Pigs, horses, wild boar	-
Estonia	1945	2000	Pig, horses, wild boar, other wildlife	2000
Finland	1995	1930	Pigs, horses, farmed and wild game	1930
France	2000	-	Pig, horses, wild boar	<1990
Germany	yes	yes	Pig, horses, wild boar, other wildlife	-
Greece	yes	1980	Pigs	1977
Hungary	1960	no	Pigs, horses, nutria, wild boar	1984
Ireland	2004	yes	Pigs, horses, wild boar, other wildlife	not notifiable[3]
Italy	1990	-	Pigs	1958
Latvia	1988	yes	Pigs, horses, wild boar	-
Lithuania	1990	>30 years	-	-
Luxembourg	-	1947	Pigs, horses, wild boar	-
Malta	-	-	Pigs (random), horses	-
Netherlands	yes	yes	Pigs, horses, wild boar	-
Poland	1919	1928	Pigs, horses, wild boar	-
Portugal	yes	1953	Pigs	yes
Romania				
Slovakia	yes	yes	All animals for human consumption	2000
Slovenia	1977	1991	Pigs, horses, wild boar, bears	2003
Spain	1982	1952	Pigs, wild boar	1952
Sweden	> 30 years	>50 years	Pigs, horses, wild boar, bears	>50 years
United Kingdom	no	1980	Pigs, horses	yes
Norway	1975	1965	Pigs, horses, wild boar, bears	1965
Switzerland	no	1966	Pigs, horses	no

Note: Directive 64/433/EC and/or Directive 77/96/EC were no longer in force in 2006. Replaced by Regulation (EC) No 2075/2005
1. In Belgium, the Flemish Community
2. In Denmark, only clinical cases are notifiable
3. In Ireland, reportable by FBO to competent authority under SI 154/2004 - European Communities (Monitoring of Zoonoses) Regulations 2004

Appendix Table EH1.* Echinococcus *monitoring programmes and diagnostic methods in humans and/or animals, 2007

Country	Type of data	Diagnostic methods
Austria	Laboratory confirmed	Humans: ELISA, Western blot. Animals: Histopathology, ultrasound, X-ray, computed tomography, serology or combo serology DNA (PCR)
Belgium	Laboratory confirmed	Humans: *E. granulosis*: ELISA and IHA, *E. multilocularis* ELISA Animals: visual examination of organs, microscopic examination of mucosal scrapings of the gut
Bulgaria		
Cyprus	-	-
Czech Republic	-	-
Denmark	Laboratory confirmed	Humans: Abdominal CT Scan, serology, histopathology
Estonia	Laboratory confirmed	Histopathology, serology
Finland	Laboratory confirmed	Humans: Serology, histopatology. Animals: copro-ELISA, copro-PCR, PCR, visual examination of organs
France	Voluntary reporting	Animal: Faeces --> Flotation and PCR, Intestines --> Scrapping and sedimentation Humans : ELISA, Western blot, histopathology, X-ray
Germany	-	-
Greece	-	Humans: X-ray, echo and serological investigation
Hungary	Laboratory confirmed	Western blot
Ireland	-	-
Italy	-	-
Latvia	Laboratory confirmed/monthly	Serology
Lithuania	Laboratory confirmed	Serology (ELISA and Western blot), Histopathology, imaging
Luxembourg	Laboratory confirmed	Foxes: microscopical diagnostic and PCR in faeces Other animals: inspection at slaughterhouse
Malta	-	-
Netherlands	Laboratory confirmed	Serology
Poland	Laboratory confirmed	Serology (ELISA and Western blot) and histopathology
Portugal	-	
Romania		
Slovakia	Laboratory confirmed	Humans: serology and histopathology
Slovenia	Laboratory confirmed	Humans: serology, Rtg, CT Scan, MRI
Spain	Laboratory confirmed, passive case finding	According to Decision 2119/98/EC, Decision 2002/253/EC and Decision 2002/243/EC
Sweden	Laboratory confirmed, passive case finding	Humans: Copro-ELISA, copro-PCR, PCT, visual examination of organs
United Kingdom	Voluntary reporting	-
Norway	Laboratory confirmed	Humans: serology, histopathology. Animals: PCR, egg detection, histopathology
Switzerland	-	-

Monitoring, treatment etc.
Foxes tested on request
Information campaign in wooded areas about consumption of berries
Scheme to treat dogs and stray dogs with Pranziquantel
A monitoring programme for *Echinococcus* in foxes was introduced in 2005 Samples are taken from foxes hunted for control of vaccination efficiency against rabies
-
-
Treatment required for dogs and cats imported for countries other than Sweden, Norway (other parts than Spitsbergen), United Kingdom and Ireland and animals less than three months old entering from MS, recommended for hunting dogs before and after hunting season. Continuous surveillance for *Echinococcus* in foxes and raccoon dogs
A survey on *Echinococcus multilocularis* in foxes. Faecal samples analysis
-
-
-
-
-
Macroscopic investigation on hydatic cysts at the slaughterhouse is a part of the meat inspection procedure. Treatment with an anti-helmintic drugs is recomended in the final hosts - dogs and cats
-
Foxes tested on request
-
-
-
Three regions have a programme running where dogs are dewormed
-
Systematic dehelminthisation of dogs along with anti-rabies vaccination
Infection control in animals
Since 2001, an annual investigation of 300-400 foxes Anthelmintic treatment required for dogs imported from countries other than Finland and Norway
Treatment for imported dogs and cats. Regional deworming programme. Abattoir testing
Anthelmintic treatment required for dogs imported from countries other than Finland and Sweden Mandatory meat inspection for hydatid cysts, survey of *E. multilocularis* in foxes
-

Appendix Table EH2. Notification of Echinococcus *in humans, animals and food, 2007*

Country	Notifiable in humans since	Notifiable in animals since	Notifiable in food since
Austria	2004	1994	1994
Belgium	< 1999	1998	2004
Bulgaria	-	-	-
Cyprus	1969	-	-
Czech Republic	yes	no	-
Denmark	no	yes	-
Estonia	1986	2000	2000
Finland	1995	1995[1]	1995[1]
France	yes	no	-
Germany	yes	-	-
Greece	yes	1980	
Hungary	1960	no	1984
Ireland	2004	-	not notifiable[2]
Italy	1990	yes	1964
Latvia	1999	yes	-
Lithuania	1990	yes	-
Luxemburg	-	no	-
Malta	-	-	-
Netherlands	no	yes	yes
Poland	1959/1997[3]	-	-
Portugal	yes	yes	-
Romania			
Slovakia	yes	yes[4]	no
Slovenia	1977	1991[5]	2003
Spain	1982	1994	1994
Sweden	2004	>30 years	>30 years
United Kingdom	no	no	no
Norway	2003	1985	1965[6]
Switzerland	no	1966	-

1. In Finland, also notifiable before 1995, but legislation changed in 1995
2. In Ireland, reportable by FBO to competent authority under SI 154/2004 - European Communities (Monitoring of Zoonoses) Regulations 2004
3. In Poland, from 1959 registered together with other tapeworms, from 1997 reported separately
4. In Slovakia, only clinical cases
5. In Slovenia, the year of independence, however this disease was notifiable before 1991
6. Mandatory meat inspection for hydatid cysts

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