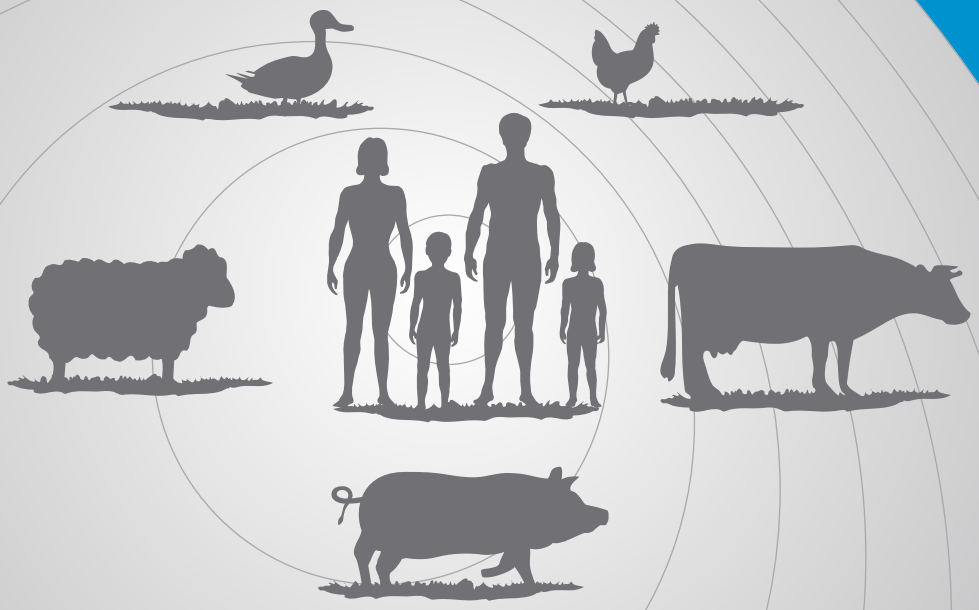
ZOONOSES

IN IRELAND UPDATE FOR 2008



Food Safety
AUTHORITY OF IRELAND

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An Roinn
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ZOONOSES

IN IRELAND **UPDATE FOR 2008**

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INTRODUCTION

Zoonoses are diseases and infections naturally transmissible from vertebrate animals to man by direct contact with infected animals, insects or animal excreta. While it is possible for anybody to become infected with a zoonotic agent, certain population groups such as the very young, the elderly and immunocompromised are particularly vulnerable and at greater risk of more serious consequences. The eradication of zoonoses in humans and animals is a difficult if not impossible goal to achieve. However, the impact of zoonoses on the health of humans and animals can be limited by monitoring the reservoirs of infectious zoonotic agents with a view to understanding and controlling their modes of transfer, while educating the public about how to avoid or limit the risk of infection.

The European Community system for monitoring and reporting information on zoonoses is based on Directive 2003/99/EC. Annually, the European Food Safety Authority (EFSA) publishes a Community report on zoonoses and foodborne outbreaks in the European Union. While general pan-European trends may be deduced from Community reports, they should be viewed in context, taking into account variations in culture, diets, animal husbandry practices, types and extent of external borders, as well as national sampling, testing and reporting regimes.

The addition of a number of zoonoses to the list of notifiable human diseases in Ireland in 2004 has had an effect on the reported incidence rates of some zoonoses. The expanded list has resulted in a more accurate reflection of the incidence and impact of such diseases in Ireland, which in turn should permit a more confident assessment of emerging trends.

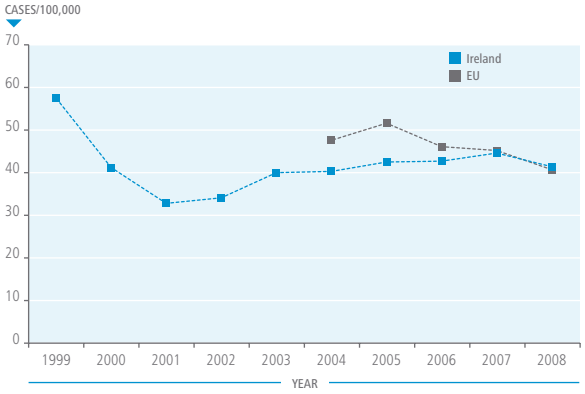
This zoonoses update presents available zoonotic data for Ireland for 2008.

1. CAMPYLOBACTERIOSIS

HUMAN

Campylobacteriosis is the most common bacterial cause of gastroenteritis in Ireland and Europe. In 2008, 1,758 cases were notified in Ireland, 133 less notifications than in 2007. This is a crude incidence rate of 40.9 per 100,000 of the population of Ireland, compared to a reported crude incidence rate of 40.7 per 100,000 of the population notified in Europe (Figure 1.1.).

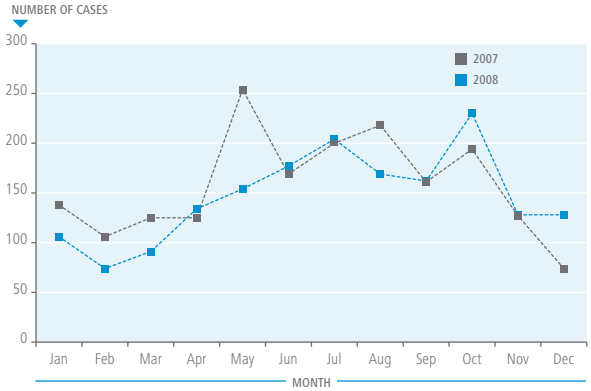
Figure 1.1. Crude incidence rate of campylobacteriosis cases per 100,000 population (Ireland 1999-2008 and EU 2004-2008)



(Source: Health Protection Surveillance Centre (HPSC) & EFSA)

The seasonal distribution of *Campylobacter* spp. is typically characterised by an increase in incidence rates during the summer months. While as expected, a peak was recorded during the summer months in 2008, a second peak was also reported in autumn. The number of cases reported in October, 2008 (n=230), was slightly higher than the number recorded in July, 2008 (n=204) (Figure 1.2.).

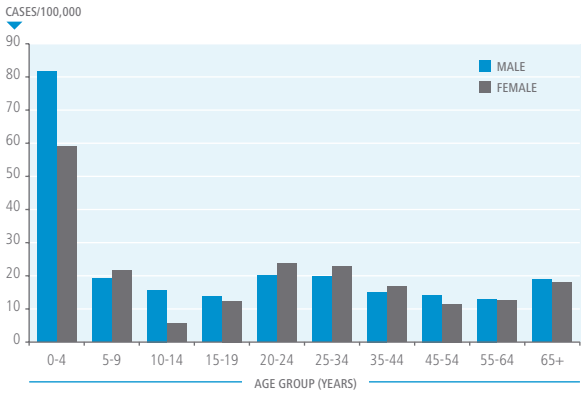
Figure 1.2. Seasonal distribution of campylobacteriosis notifications (2008 versus 2007)



(Source: HPSC)

Campylobacteriosis was reported in all age groups with the highest burden of illness experienced in the 0-4 age group, a trend also observed at the European level in 2008 (EFSA, 2009). A slightly elevated incidence rate was observed in males between the ages of 0-4 years and 0-14 years (Figure 1.3.).

Figure 1.3. Age-specific incidence of campylobacteriosis



(Source: HPSC)

During 2008, seven family outbreaks of campylobacteriosis were notified, with 14 associated cases of illness. The mode of transmission was reported to be person-to-person transmission in three of these outbreaks, while food and animal contact were suggested as possible routes of infection in the remaining two outbreaks.

FOOD

The zoonoses data for Ireland for 2008 reveal the absence of *Campylobacter* spp. in all raw (n=119) and ready-to-eat (n=648) food samples tested (Table 1.1.). Only one sample (0.08%) out of all the samples tested in 2008 was positive for *Campylobacter* spp. (*C. coli*). However, the ready-to-eat status of this sample was not specified. A recent EFSA opinion (based on EU data up to 2007) estimated that handling, preparation and consumption of broiler meat may account for 20% to 30% of human cases of campylobacteriosis in the EU (EFSA, 2010a). Moreover, a recent EFSA baseline study (carried out 2008) found that 83% of Irish chickens were infected on arrival at the slaughterhouse and 98% were found to be contaminated at the end of the slaughter process (EFSA, 2010b). The Irish baseline study data are not included in Table 1.1.

EFSA recommends process biosecurity measures as the most effective means of reduction of *Campylobacter* spp. on poultry carcasses (EFSA, 2005). This includes the reduction of faecal spreading during slaughter and appropriate physical, e.g. freezing, and chemical decontamination techniques. Effective control measures early in the food chain are important in reducing *Campylobacter* spp. on meat. While no obligatory end-product microbiological standards for *Campylobacter* spp. are specified in legislation, a ready-to-eat product confirmed positive for *Campylobacter* spp. should be withdrawn/recalled from the market as per Article 14 of Regulation (EC) No. 178/2002 (*food shall not be placed on the market if it is unsafe*).

Table 1.1. Number of samples tested and samples positive for *Campylobacter* spp. by food type and sampling site

FOOD TYPE	SAMPLING SITE	RTE STATUS	TESTED	POSITIVE
FRESH MEAT				
Broiler	Processing	Raw	6	0
	Retail	Raw	1	0
Turkey	Processing	Raw	4	0
Bovine	Retail	Raw	1	0
MEAT PRODUCTS				
Broiler	Processing	RTE	18	0
	Retail	RTE	162	0
		Raw	2	0
		NS	209	1
Turkey	Processing	RTE	19	0
	Retail	RTE	26	0
		NS	32	0
Duck	Retail	RTE	6	0
		NS	6	0
Unspecified poultry meat	Processing	RTE	8	0
	Retail	Raw	1	0
Pork	Retail	RTE	66	0
		Raw	90	0
		NS	122	0
Bovine	Retail	RTE	36	0
		Raw	1	0
		NS	36	0
Ovine	Retail	RTE	8	0
		NS	2	0
Unspecified & mixed meat products	Processing	RTE	5	0
	Retail	Raw	25	0
		Raw	2	0
		NS	32	0

FOOD TYPE	SAMPLING SITE	RTE STATUS	TESTED	POSITIVE
OTHERS				
Fishery/seafood products	Retail	RTE	1	0
		Raw	2	0
		NS	12	0
Milk and milk products	Retail	RTE	15	0
		Raw	1	0
		NS	1	0
Eggs & egg products	Retail	Raw	9	0
		NS	7	0
Fruit & vegetables & juices	Retail	NS	5	0
Sandwiches	Retail	RTE	179	0
Other foods	Retail	RTE	73	0
		NS	18	0
Overall Total			**1,249**	**1 (0.08%)**
consisting of				
Total RTE			**648**	**0**
Total Raw			**119**	**0**
Total NS			**482**	**1 (0.21%)**

(Source: FSAI, Dept of Agriculture, Fisheries and Food (DAFF) & Official Food Microbiology Laboratories (OFMLs))

RTE: Ready-to-eat, NS: Not Specified

ANIMALS

Most types of domestic animal, but particularly poultry, are readily colonised with *C. jejuni* and to a lesser extent *C. coli*. *Campylobacter* spp. were detected in 325 (11.55%) of the 2,813 animals tested in 2008 (Table 1.2.). While no poultry was tested in this year, an EU baseline study reported that 83% of Irish chickens were infected on arrival at the slaughterhouse (EFSA, 2010b).

Table 1.2. Isolation of *Campylobacter* spp. from animals

ANIMAL	TESTED	POSITIVE	SEROTYPE
Cattle	2,567	306	*C. jejuni*
Sheep	178	6	*C. jejuni*
Pigs	7	2	*C. jejuni*
Chickens	0	0	–
Dogs	33	9	*C. jejuni*
Others	28	2	*C. jejuni*
Total	**2,813**	**325 (11.55%)**	

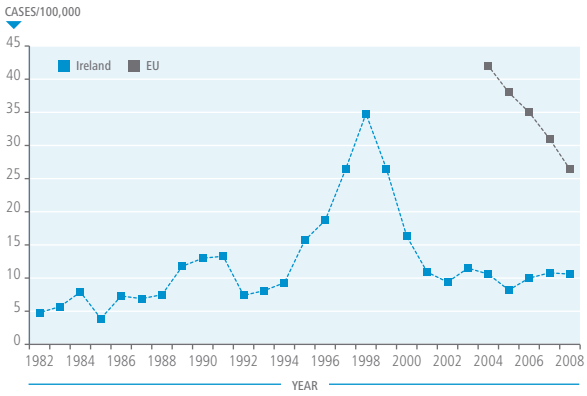
(Source: DAFF)

2. SALMONELLOSIS

HUMAN

Salmonellosis is a notifiable human disease in Ireland and its incidence rates have remained relatively stable since 2001. The national crude incidence rate of salmonellosis in 2008 was 10.6 per 100,000 population. This is similar to the Irish crude incidence rate for 2007 which was 10.8 per 100,000 population, but lower than the European crude incidence rate which was 26.4 per 100,000 in 2008 (Figure 2.1.).

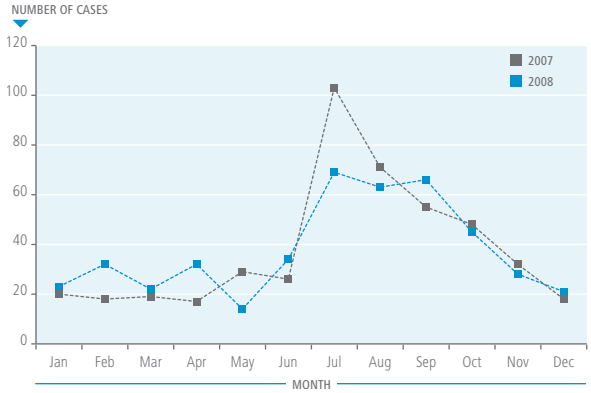
Figure 2.1. Crude incidence rate of salmonellosis notifications per 100,000 population (Ireland 1982-2008 and EU 2004-2008)



(Source: HPSC & EFSA)

Similar to 2007, the highest number of notifications occurred in the summer months (mid June to the start of October). This correlates with peak holiday periods and an increase in the number of people travelling abroad (Figure 2.2.).

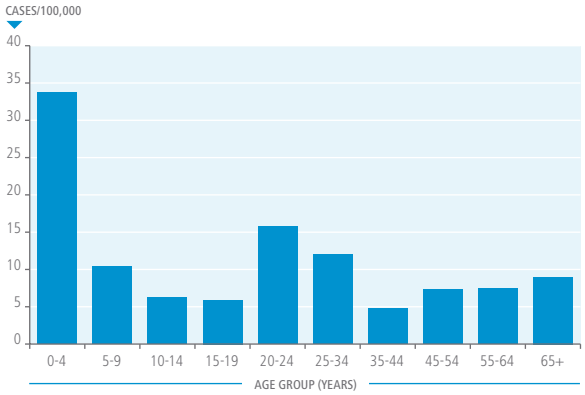
Figure 2.2. Seasonal distribution of human salmonellosis notifications (2008 versus 2007)



(Source: HPSC)

In terms of age distribution, 23% of salmonellosis cases occurred in children under the age of five (Figure 2.3) in 2008. While this is noteworthy, it is possible that it is also a reflection of clinicians seeking clinical samples in children under five.

Figure 2.3. Age-specific incidence rate of salmonellosis notifications



(Source: HPSC)

The most common serotype among non-typhoidal human *Salmonella* spp. isolates in 2008 was *S.* Typhimurium (31.1%), followed closely by *S.* Enteritidis (27.3%) (Table 2.1.).

Table 2.1. Serotype distribution of *Salmonella* spp. isolates referred to the National Salmonella Reference Laboratory (NSRL)

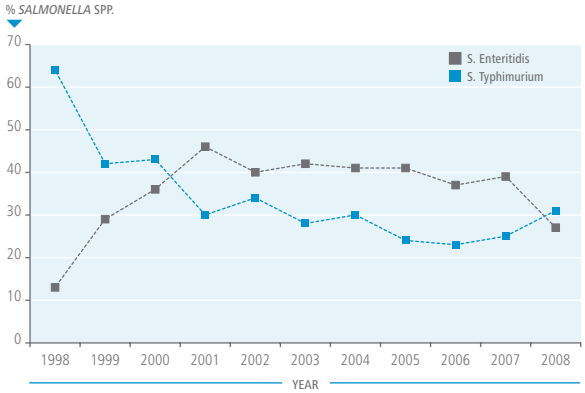
RANK	SEROTYPE	NUMBER	%
1	Typhimurium	139	31.1%
2	Enteritidis	122	27.3%
3	Agona	13	2.9%
4	Virchow	10	2.2%
5	Worthington	7	1.6%
6	Panama	7	1.6%
7	Java	7	1.6%
8	Newport	6	1.3%
9	Kentucky	6	1.3%
10	Bredeney	6	1.3%
	Others*	124	27.8%
	Total	**447**	
	Non-typhoidal	**435**	**97.3%**

(Source: NSRL & HPSC)

* Out of the 124 'others', 6 isolates of Paratyphi A (1.3%), 5 isolates of Typhi (1.1%) and 1 isolate of Paratyphi B (0.2%)

S. Typhimurium has not been reported as the most prevalent serotype in Ireland since the year 2000 (43%). In the intervening years (2001 to 2007), *S.* Enteritidis was the dominant serotype, and *S.* Typhimurium was the second most common species (Figure 2.4). The increase in *S.* Agona (which did not appear in the top ten in 2006 and 2007) can be attributed to an international outbreak which involved 11 Irish cases.

Figure 2.4. *S.* Enteritidis and *S.* Typhimurium infections (1998 to 2008)



(Source: NSRL & HPSC)

There were 22 outbreaks of *Salmonella* spp. in Ireland in 2008, resulting in 79 persons being ill and an associated hospitalisation rate of 25%. This is an increase of 120% on the number of salmonellosis outbreaks which occurred in the previous year (10 outbreaks). Foodborne outbreaks accounted for illness in 53 persons in 2008.

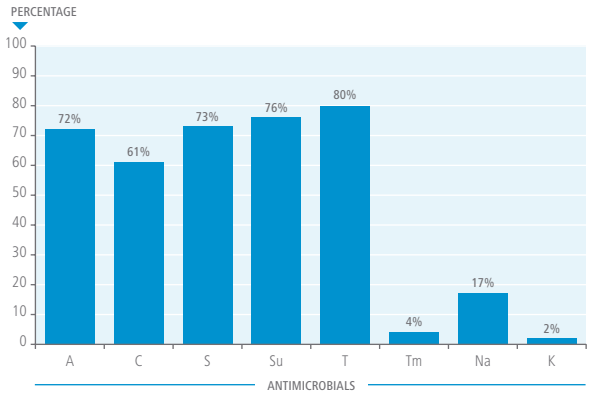
The most significant outbreak during 2008 involved a strain of *S.* Agona. This serotype was identified in 11 Irish cases and another 152 cases throughout England, Scotland, Wales and five other European countries. The epidemiological investigations supported by microbiological evidence, identified ready-to-eat meat products produced at an Irish food plant as the source of the outbreak. This company initiated a temporary closure of the implicated section of the plant and recalled affected product.

ANTIMICROBIAL RESISTANCE IN CLINICAL ISOLATES OF *SALMONELLA* SPP.

The NSRL undertakes antimicrobial susceptibility testing (as well as serotyping) on *Salmonella* spp., isolated from clinical and non clinical sources in Ireland.

S. Typhimurium had the highest level of antimicrobial resistance in 2008 (similar to previous years). Multi-antimicrobial resistant *S.* Typhimurium is commonly resistant to ampicillin, chloramphenicol, streptomycin, sulphonamides and tetracycline (ACSSuT). The genes conferring this resistance are typically carried on the *Salmonella* genomic island 1 (SGI1), a structure which has the ability to accumulate resistance to other antimicrobials (due to the presence of a Class 1 integron). High levels of resistance to ACSSuT were recorded in human clinical isolates from Irish and non-Irish (travel associated) sources (Figure 2.5 and Figure 2.6). In addition, the emergence of resistance to trimethoprim, nalidixic acid, kanamycin (in Irish clinical isolates only) and ceftazidime (from travel associated isolates only) was noted.

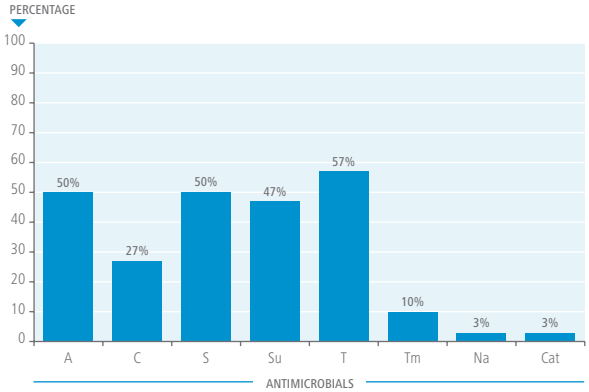
Figure 2.5. Antimicrobial resistance in Irish clinical isolates of *S.* Typhimurium referred to the NSRL (n=103)



(Source: NSRL)

Ampicillin (A); Chloramphenicol (C); Streptomycin (S); Sulphonamides (Su); Tetracycline (T); Trimethoprim (Tm); Nalidixic acid (Na) and Kanamycin (K)

Figure 2.6. Antimicrobial resistance in Irish clinical isolates of *S.* Typhimurium from travel-associated cases (n=30)



(Source: NSRL)

Ampicillin (A); Chloramphenicol (C); Streptomycin (S); Sulphonamides (Su); Tetracycline (T);Trimethoprim (Tm); Nalidixic acid (Na) and Ceftazidime (Caz)

Antimicrobial resistance in the clinical *S.* Enteritidis isolates examined (n=60) was low, with 82% showing antimicrobial susceptibility to all antimicrobials tested and 5% showing resistance to three antimicrobials. Thirty three percent of the other *Salmonella* spp. studied (n=124), showed complete antimicrobial susceptibility with 11% showing resistance to three or more antimicrobials.

FOOD

In 2008, 74,538 meat-based food samples (120,240 food samples in total) were tested for *Salmonella* spp. with 1.08% of raw meat samples and 0.24% of ready-to-eat meat products confirmed positive for *Salmonella* spp. (Table 2.2). Commission Regulation (EC) No. 2073/2005 on microbiological criteria for foodstuffs lays down criteria for *Salmonella* spp. in a variety of raw and ready-to-eat foodstuffs including; meats, dairy products, egg products, fish, fruit, vegetables and infant formula. The majority of samples tested in 2008 (106,025) were 'industry own check' samples representing 88% of the total, as opposed to official samples which were 12%. Industry own check samples are taken from processing plants and submitted to the Department of Agriculture, Fisheries and Food (DAFF) approved private laboratories for analysis for *Salmonella* spp. Serotyping is then performed by the Central Veterinary Research Laboratory (CVRL) which is the National Reference Laboratory (NRL) for *Salmonella* spp. in food.

Table 2.2. Number of samples tested and number of samples positive for *Salmonella* spp. in meat by food type and sampling site

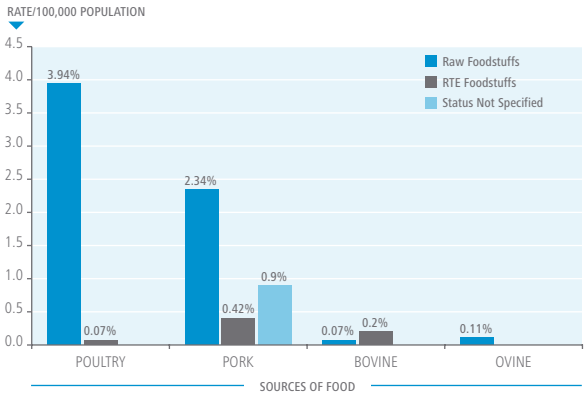
FOOD TYPE	SAMPLING SITE	RTE STATUS	TESTED	POSITIVE
FRESH MEAT				
Poultry	Processing	Raw	4,946	228
	Retail	Raw	2	0
Pork	Processing	Raw	1,744	55
Bovine	Processing	Raw	17,528	50
	Retail	Raw	1	0
Ovine	Processing	Raw	1,336	1
MEAT PRODUCTS				
Poultry	Processing	RTE	6,985	5
		Raw	1,616	27
	Retail	RTE	544	0
		Raw	8	4
		NS	985	0
Pork	Processing	RTE	8,854	37
		Raw	4,121	90
	Retail	RTE	351	2
		Raw	714	9
		NS	1,107	10
Bovine	Processing	RTE	4,729	4
		Raw	9,452	7
	Retail	RTE	249	6
		Raw	5	0
		NS	296	0
Ovine	Processing	RTE	219	0
		Raw	904	1
	Retail	RTE	34	0
		NS	28	0
Meat products unspecified	Processing	RTE	1,450	3
		Raw	4,590	37
	Retail	RTE	94	0
		Raw	8	0
		NS	223	0
Products of animal origin	Processing	NS	796	3

FOOD TYPE	SAMPLING SITE	RTE STATUS	TESTED	POSITIVE
CARCASS SWABS				
Pork	Processing	Raw	322	1
Beef	Processing	Raw	340	0
Overall Total			74,583	580 (0.78%)
consisting of				
Total RTE			23,509	57 (0.24%)
Total Raw			46,977	509 (1.08%)
Total NS			3,435	13 (0.38%)
Carcass Swabs			662	1 (0.15%)

(Source: CVRL, Central Meat Control Laboratory (CMCL), DAFF & OFML)
RTE: Ready-to-eat, NS: Not specified

A more detailed analysis of the level of contamination of *Salmonella* spp. on raw meat reveals a 3.94% level on raw poultry and a 2.34% level on raw pork meat (Figure 2.7). However, these levels of contamination were reduced to 0.07% and 0.42% on the respective ready-to-eat food products tested. The level of contamination was found to be low on raw bovine meat (0.07%), raw ovine meat (0.11%) and ready-to-eat bovine meat (0.2%).

Figure 2.7. Percentage of *Salmonella* spp. isolated from samples of poultry, pork, bovine and ovine foodstuffs by ready-to-eat status (Ireland, 2008)

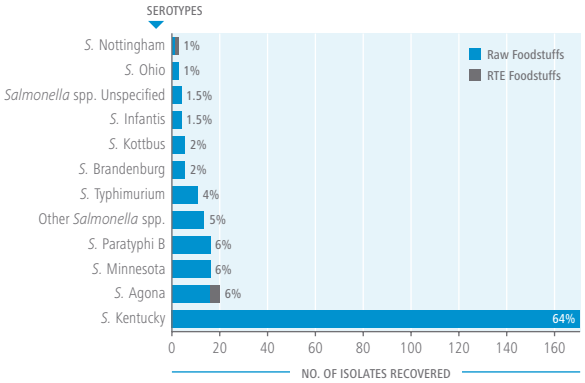


(Source: CVRL, CMCL, DAFF & OFML)
RTE: Ready-to-eat, NS: Not Specified

The 3.94% of raw poultry meat confirmed positive for *Salmonella* spp. (Figure 2.7.), were contaminated with a range of serotypes of *Salmonella* spp. including: *S.* Kentucky (169 positive samples), *S.* Minnesota (16 positive samples), *S.* Paratyphi B (15 positive samples), *S.* Agona (13 positive samples) and *S.* Typhimurium (10 positive samples) (Figure 2.8). Seven of the 10 *S.* Typhimurium isolates recovered were subtyped and were identified as; DT104b (n=2), DT193 (n=2), DT49 (n=2), and U288 (n=1). One isolate of *S.* Enteritidis was also recovered from a raw poultry meat sample (under 'Other *Salmonella* spp.' in Figure 2.8) in this year. This isolate of *S.* Enteritidis was phage typed as PT8.

While 169 positive isolates of *S.* Kentucky were recovered from raw poultry meat in 2008, no *S.* Kentucky was recovered from any ready-to-eat poultry meat sampled in this year. However, four ready-to-eat poultry samples were confirmed positive for *S.* Agona and one ready-to-eat poultry sample was confirmed positive for *S.* Nottingham (Figure 2.8).

Figure 2.8. Serotypes isolated from poultry

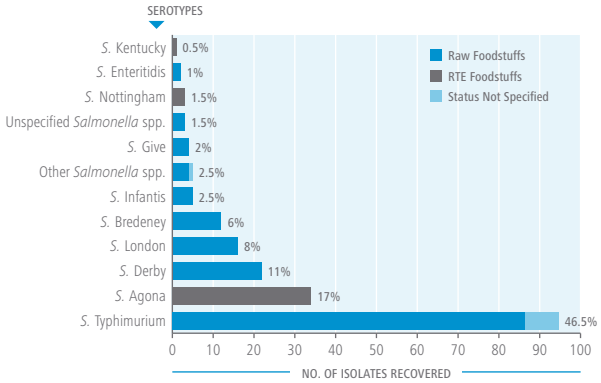


(Source: CVRL, CMCL, DAFF & OFML)

RTE: Ready-to-eat, NS: Not specified

The predominant serotype isolated from raw pork meat was *S.* Typhimurium (46.5%). However, no strains of this serotype were isolated from ready-to-eat pork meat tested in 2008 (Figure 2.9.). Seventy four out of the 95 *S.* Typhimurium isolates recovered from pork were subtyped and identified as; DT104b (n=32), DT193 (n=11), DT104 (n=10), U288 (n=9), DT12 (n=5), DT17 (n=2), DT112 (n=2), DT120 (n=1), U302 (n=1) and DT208 (n=1). The second most common serotype *S.* Agona (17%) was only isolated from ready-to-eat products. Other serotypes recovered from ready-to-eat products included *S.* Nottingham (1.5%) and *S.* Kentucky (0.5%). Two isolates of *S.* Enteritidis were isolated from raw pork meat samples and both were phage typed as PT2.

Figure 2.9. Serotypes isolated from pork

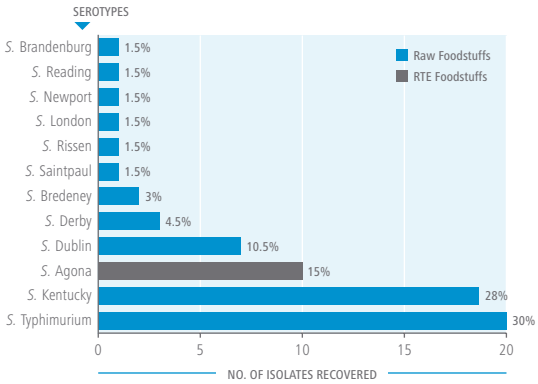


(Source: CVRL, CMCL, DAFF & OFML)

RTE: Ready-to-eat, NS: Not specified

Similar to pork, *S.* Typhimurium was the most predominant serotype (30%) isolated from bovine meat (Figure 2.10.). Eighteen out of 20 *S.* Typhimurium isolates recovered from bovine meat were subtyped and identified as; DT104b (n=9), DT104 (n=2), DT12 (n=2), DT193 (n=2), DT17 (n=1), U288 (n=1) and U302 (n=1). *S.* Typhimurium was followed closely by *S.* Kentucky (28%), *S.* Agona (15%) and *S.* Dublin (10%). *S.* Agona was the only serotype isolated from ready-to-eat pork products (10 positive samples).

Figure 2.10. Serotypes isolated from bovine meat (Ireland, 2008)



(Source: CVRL, CMCL, DAFF & OFML)

RTE: Ready-to-eat, NS: Not specified

S. Agona Outbreak

As previously mentioned (on page 9), an outbreak of *S.* Agona associated with ready-to-eat poultry, pork and bovine food products, occurred in Ireland in 2008. This outbreak may have influenced the type of product sampled and the number of samples reported positive for *S.* Agona in this year. *S.* Agona was reported to be third most common *Salmonella* spp. isolate recovered from food in 2008 (n=67). *S.* Agona was reported to be the third most common *Salmonella* spp. isolate recovered from food in 2007 also (n=41) and the eighth in 2006 (n=18). While the increase in the number of *S.* Agona isolates recovered from food between 2007 and 2008 was moderate, the occurrence of these isolates on ready-to-eat food in 2008 (as opposed to raw food) was a cause for concern.

The zoonoses data reveal that a total 45,702 non meat-based food products were tested for *Salmonella* spp. in Ireland in 2008, 0.06% of which were confirmed positive for this pathogen (Table 2.3.). The foodstuffs tested included; dairy products (such as milk, cheese, butter, cream, and desserts), eggs and egg products, fish and fish products, fruit and vegetables and 'other foods' (as per Table 2.3)*. No *Salmonella* spp. were recovered from 336 raw foodstuffs tested. Two samples (0.04%) out of 5,577 ready-to-eat samples tested and 25 samples (0.06%) out of the 39,379 products where the ready-to-eat status was not specified, were confirmed positive for *Salmonella* spp.

* *Salmonella* spp. was recovered from one (0.30%) of raw foodstuffs tested.

Table 2.3. Number of samples tested and number of samples positive for *Salmonella* spp. in dairy, eggs, fish, fruit and vegetables, and other foods by food type and sampling site

FOOD TYPE	SAMPLING SITE	RTE STATUS	TESTED	POSITIVE
MILK & DAIRY PRODUCTS				
Milk	Processing	RTE	61	0
	Retail		8	0
	Processing	Raw	33	0
	Retail		1	0
	Retail	NS	5	0
Milk and whey powder	Processing	NS	10,002	9
Cheese from pasteurised milk	Processing	RTE	6	0
	Retail		242	0
Cheese from raw or low heat-treated milk	Processing	RTE	553	2
Butter from pasteurised milk	Retail	RTE	1	0
Butter from raw or low heat-treated milk	Processing	NS	15	0
Cream	Retail	RTE	55	0
Desserts & ice-cream	Processing	NS	481	0
	Retail	RTE	158	0
Unspecified milk products	Processing	NS	8,793	2
	Retail	NS	7	0

FOOD TYPE	SAMPLING SITE	RTE STATUS	TESTED	POSITIVE
EGGS				
Table eggs or egg products	Processing	NS	1,166	1
		Raw	91	0
	Retail	NS	437	0
		Raw	118	1
FISH				
Fish and fishery products (including crustaceans and molluscs)	Processing	RTE	22	0
	Retail		240	0
	Processing	Raw	69	0
	Retail		24	0
	Processing	NS	4	0
	Retail		219	0
FRUIT & VEGETABLES				
Pre-cut	Retail	RTE	2,563	0
		NS	71	0
Unprepared	Retail	NS	264	0
Ready-to-eat salads	Retail	RTE	684	0
OTHER FOODS				
Juices & soft drinks	Retail	RTE	50	0
Bakery products	Retail	RTE	375	0
Cereals & meal	Retail	NS	219	0
Confectionary, nut products, cocoa, tea & coffee	Retail	RTE	57	0
Dried seeds, spices & herbs	Retail	RTE	50	0
Soups, sauces and dressings	Retail	RTE	437	0
Infant formula & PARNUTS	Processing	NS	520	0
	Retail	RTE	8	0
Other processed food & prepared dishes	Processing	NS	15,737	13
	Retail	NS	1,856	0

FOOD TYPE	SAMPLING SITE	RTE STATUS	TESTED	POSITIVE
Overall Total			45,702	28 (0.06%)
consisting of				
Total RTE			5,577	2 (0.04%)
Total Raw			336	1 (0.30%)
Total NS			39,789	25 (0.06%)

(Source: CVRL, DAFF & OFMLS)

Unless otherwise specified, milk source was cow, goat or sheep

PARNUTS: Foodstuffs intended for special nutritional uses

RTE: Ready-to-eat, NS: Not specified

The 28 positive samples and their associated serotypes (where available), are listed in Table 2.4. No serotyping information was available for the *Salmonella* spp. isolates recovered from the two ready-to-eat food products (both of which were recovered from cheese made from raw or low heat-treated milk). *S.* Typhimurium was the most predominant serotype recovered (13 positive samples) from the other 26 food samples (where the ready-to-eat status was not specified), followed by *S.* Manchester (7 positive samples). One raw sample (table eggs) was positive for *S.* Enteritidis and phage typed as PT4.

Table 2.4. Serotyping of the *Salmonella* spp. recovered from the 28 positive food samples

NO OF ISOLATES	FOOD TYPE	RTE STATUS	SEROTYPE
13 positive samples	Processed and prepared food	NS	*S.* Typhimurium (6 x DT104, 2 x DT104b, 1 x DT193, 2 x DT49, 1 x DT170b and 1 x not typed)
9 positive samples	Milk powder & whey powder	NS	7 x *S.* Manchester 2 x *S.* Mbandata
2 positive samples	Dairy products	NS	*Salmonella* spp. Unspecified
2 positive samples	Cheese from raw & heat-treated milk	RTE	*Salmonella* spp. Unspecified
1 positive sample	Egg product	NS	*S.* Duisburg
1 positive sample	Table egg	Raw	*S.* Enteritidis

(Source: CVRL, DAFF & OFMLs)

RTE: Ready-to-eat, NS: Not specified

ANIMALS

Salmonella spp. was detected in four parent flocks (one isolate of *S.* Dublin, one isolate of *S.* Enteritidis and two isolates of *S.* Kentucky) and two laying hen flocks (one isolate of *S.* Dublin and one isolate of *S.* Derby) in 2008. *Salmonella* spp. was also recovered from hatchery samples of four breeding duck flocks (one isolate of *S.* Schwarzengrund, one isolate of *S.* Duisburg and two isolates of *S.* Brandenburg), but no *Salmonella* spp. were recovered from hatchery samples of turkey flocks tested in this year (Table 2.5.).

Table 2.5. *Salmonella* spp. in breeding and commercial poultry flocks

FLOCK TYPE	AGE/STAGE	TESTED	POSITIVE
GALLUS GALLUS			
Broiler breeding	Parent flocks	192	4
Commercial layers	Laying hens during production period	205	2
NON-*GALLUS GALLUS*			
Duck flocks	Breeding flocks	21	4
Turkey flocks	Meat production flocks	8	0
Total		426	10 (2.35%)

(Source: DAFF)

FEED

Salmonella spp. was detected in one oilseed feed (serotype 'unspecified'), and one compound pig feed (one isolate of S. Agona) in 2008 (Table 2.6.). Overall, *Salmonella* spp. was recovered in less than 1% of all feed tested in this year.

Table 2.6. *Salmonella* spp. in animal feed materials

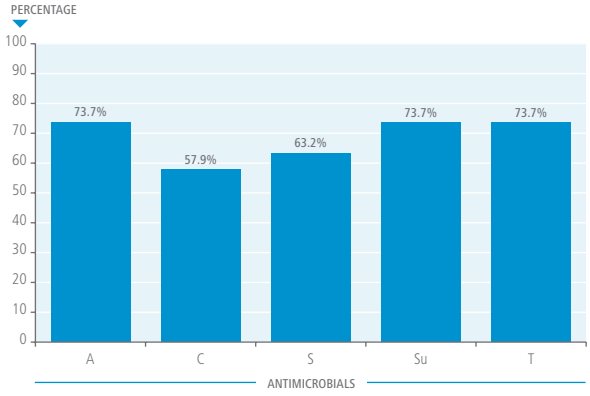
TYPE OF FEED MATERIAL	TESTED	POSITIVE
FEED MATERIAL OF ANIMAL ORIGIN		
Feed material containing fish meal	1	0
FEED MATERIAL OF VEGETABLE ORIGIN		
Cereals	77	0
Oilseeds	37	1
Other seeds & fruits	1	0
Tubers, roots & other plants	2	0
Forages and roughages	1	0
COMPOUND FEED		
Compound feed for laying hens	16	0
Compound feed for broilers	8	0
Compound feed for poultry (non-specified)	5	0
Compound feed for cattle	46	0
Compound feed for pigs	17	1
Compound feed for sheep	2	0
Compound feed for fish	6	0
Total	219	2 (0.91%)

(Source: DAFF)

ANTIMICROBIAL RESISTANCE OF *SALMONELLA* SPP. ISOLATES ASSOCIATED WITH BOVINES, PIGS AND POULTRY (FOOD, ANIMALS AND THE ENVIRONMENT)

Antimicrobial testing of *S.* Typhimurium isolates associated with bovine (n=19), poultry (n=7) and pork (n=169) by the NSRL, showed resistance to ACSSuT (Figures 2.11, 2.12, 2.13), as seen in clinical *S.* Typhimurium isolates previously (Figures 2.5, 2.6). However, 22.7 % of isolates associated with pork showed emerging resistance to trimethoprim (an antibiotic used in clinical and veterinary medicine), compared to 4% in clinical Irish isolates associated with indigenously acquired cases and 10% in clinical isolates associated with travel. Low level resistance to nalidixic acid, kanamycin and gentamycin were also noted.

Figure 2.11. Antimicrobial resistant profiles of *S.* Typhimurium isolates (n=19) associated with bovines*

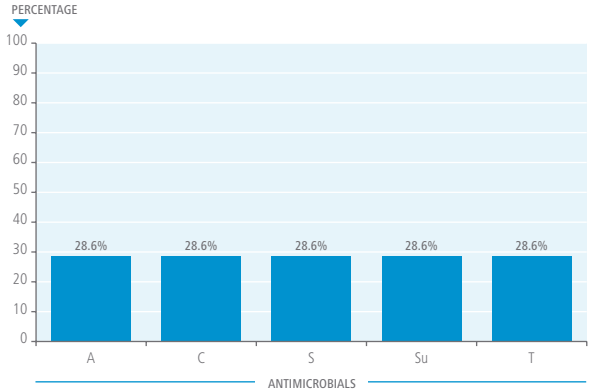


(Source: NSRL)

* Isolated from calf and cattle swabs, carcass swabs, bovine offal, steak and steak pieces, dairy products and swabs from dairy processing plants.

Ampicillin (A); Chloramphenicol (C); Streptomycin (S); Sulphonamides (Su) and Tetracycline (T)

Figure 2.12. Antimicrobial resistance profiles of *S.* Typhimurium isolates (n=7) associated with poultry*

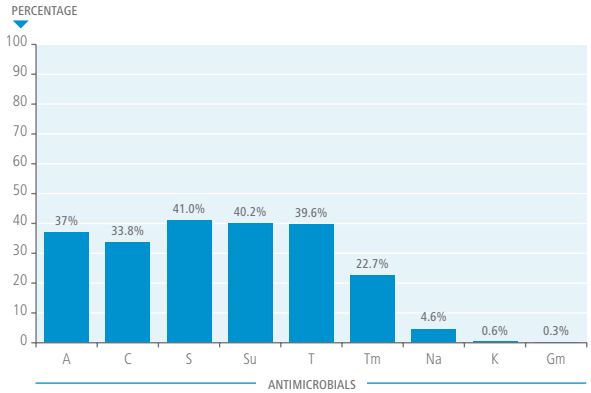


(Source: NSRL)

* Isolated from poultry and swabs of poultry house

Ampicillin (A); Chloramphenicol (C); Streptomycin (S); Sulphonamides (Su) and Tetracycline (T)

Figure 2.13. Antimicrobial resistance profiles of *S.* Typhimurium isolates (n=169) associated with pigs*



(Source: NSRL)

* Isolated from porcine meat and offal (including foot, heart, liver, lymph nodes, belly and caeca), carcass swabs, pork products (including hickory gammon steaks and sausages) and pork faeces

Ampicillin (A); Chloramphenicol (C); Streptomycin (S); Sulphonamides (Su); Tetracycline (T); Trimethoprim (Tm); Nalidixic acid (Na); Kanamycin (K) and Gentamycin (Gm)

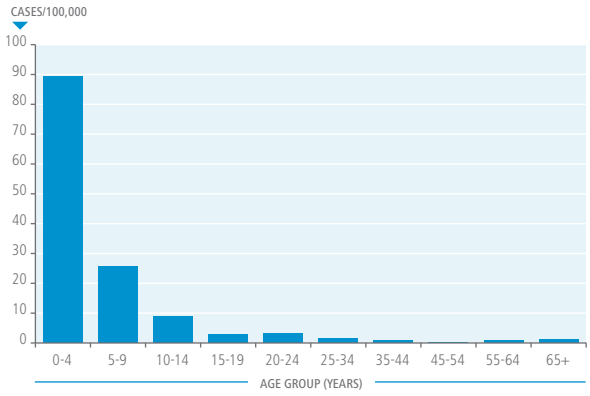
3. CRYPTOSPORIDIOSIS

HUMAN

In 2008, 416 cases of cryptosporidiosis were notified in Ireland, a crude incidence rate of 9.8 per 100,000 population. This was a 32% decrease on the number of cases notified in 2007 (a year in which a large outbreak occurred in Galway, involving 304 cases).

The highest incidence rate of cryptosporidiosis in the population tends to be in children under the age of 5. This trend was evident in 2008, with almost 90 notifications per 100,000 in children under the age of 5 (Figure 3.1).

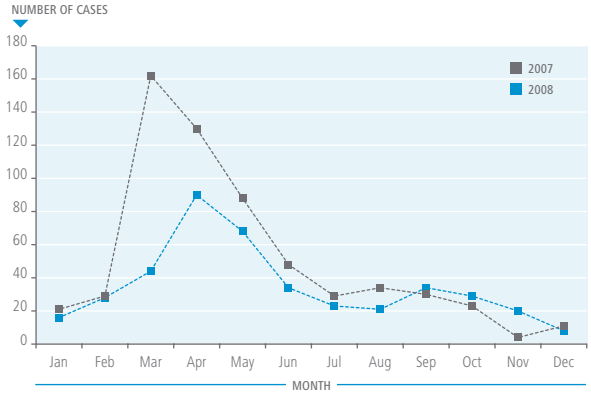
Figure 3.1. Age-specific incidence rate of cryptosporidiosis



(Source: HPSC)

Cryptosporodiosis typically occurs in spring and in early summer and this was observed again in 2008 (Figure 3.2.).

Figure 3.2. Seasonal distribution of cryptosporidiosis notifications (2008 versus 2007)



(Source: HPSC)

In 2008, information was available on the species of *Cryptosporidium* in 140 clinical cases (118 *C. parvum* and 22 *C. hominis*), with the species not known/not reported for the remaining 276 cases. Eight outbreaks of cryptosporidiosis occurred in Ireland during the year; four general outbreaks and four family outbreaks, resulting in 29 infected individuals (Table 3.1). The majority of cases appear to be sporadic.

Table 3.1. Cryptosporidiosis outbreaks

YEAR	MONTH	HSE REGION	MODE OF TRANSMISSION	OUTBREAK TYPE	NO. ILL
2008	Jan	SE	P-P	General	3
	Jan	W	WB	Family	3
	Feb	NE	P-P	General	5
	Mar	MW	Not Specified	General	3
	Mar	S	P-P and WB	Family	2
	Apr	SE	P-P and Animal	General	7
	Jul	SE	WB and Animal	Family	2
	Sep	NW	P-P	Family	4
	Total				**29**

(Source: HPSC)

P-P denoted person-to-person; WB denoted waterborne

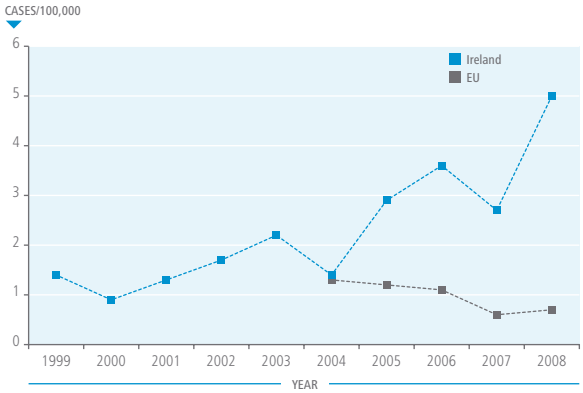
4. VEROTOXIGENIC ESCHERICHIA COLI (VTEC) INFECTION

HUMAN

In 2008, 213 confirmed VTEC cases were notified to the HPSC, a crude incidence rate of 5.0 per 100,000 population. This is the highest number of cases reported since VTEC data collection began in 1999 (Figure 4.1). If the number of confirmed cases for 2008 (213 confirmed) is compared with 2007 (115 confirmed), then 2008 represents an 85% increase on the number of confirmed cases notified in 2007.

Ireland has one of the highest incidence rates of VTEC associated cases in Europe (Figure 4.2). In 2008, Ireland's crude incidence rate was well above the European average crude incidence rate of 0.7 per 100,000 (based on notifications from 25 of the 27 Member States).

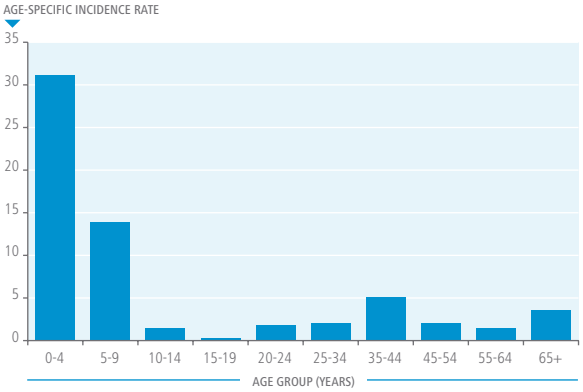
Figure 4.1. Annual crude incidence rate confirmed VTEC notifications (Ireland 1999-2008 and EU 2004-2008)



(Source: Dublin Mid Leinster-Public Health Laboratory (DML-PHL), HPSC & EFSA)

The reported incidence of disease was highest among young children (median age 6) (Figure 4.2.). This trend is consistent with previous years.

Figure 4.2. Age-specific incidence rate of confirmed VTEC notifications (Ireland, 2008)



(Source: HPSC, DML-PHL)

The verotoxin profiles of VTEC O157 strains in 2008, were similar to those reported historically for human VTEC isolates in Ireland (Table 4.1.). Eighty three percent of VTEC O157 strains carried the *vt2* gene only, while 17% carried both for *vt1* and *vt2* genes.

Table 4.1. Verotoxin results of confirmed VTEC isolates					
SEROGROUP	*vt1*	*vt2*	*vt1 & vt2*	NOT REPORTED	TOTAL
O157	0	134	28	0	162
O26	10	8	26	0	44
O ungroupable	1	2	6	2	11
O103	1	0	1	0	2
O113	0	0	1	0	1
O153	0	1	0	0	1
O75	0	0	1	0	1
O76	1	0	0	0	1
O8	0	1	0	0	1
Total	**13**	**146**	**63**	**2**	**224**

(Source: HPSC, DML-PHL)

Forty two outbreaks were reported in 2008, involving 145 of the 213 confirmed cases notified. Twenty nine outbreaks were VTEC O157, seven by VTEC O26, and six by a mixture of VTEC strains. Person-to-person spread is an important mode of VTEC transmission in households, child-care facilities and institutions. Person-to-person transmission was suspected in 21 VTEC outbreaks in 2008 (Table 4.2.). Drinking water was believed to have contributed to eight outbreaks, making waterborne transmission the second most common route of infection reported in this year.

Table 4.2. VTEC outbreaks			
SUSPECTED MODE OF TRANSMISSION	OUTBREAKS	CASES CONFIRMED	NO. ILL
Animal contact	1	3	1
Environmental	1	14	10
Foodborne	2	4	3
Foodborne/waterborne	1	3	3
Person-to-person	16	52	41
Person-to-person and waterborne	5	18	21
Waterborne	2	9	8
Others	2	9	3
Unknown/Unspecified	12	33	28
Total	**42**	**145**	**118**

(Source: HPSC)

FOOD

The zoonoses data reveal that a total of 115 food products were tested for verotoxigenic *Escherichia coli* (VTEC) in Ireland in 2008, and one sample (0.87%) of these tested positive for this pathogen (Table 4.3.). None of the 25 raw or 65 ready-to-eat food samples tested were contaminated with VTEC. However, one product (n=25) was confirmed positive for *E. coli* O157. This product was a pork meat product, but the ready-to-eat status was not stated. There are currently no microbiological standards for VTEC specified in Commission Regulation (EC) No. 2073/2005. The lack of microbiological criteria is due to a scientific opinion on VTEC in foodstuffs from 2003 given by the scientific committee on veterinary measure relating to public health (SCVPH), which concluded that applying an end-product microbiological standard for VTEC O157 is unlikely to deliver meaningful reductions in the associated risk for consumers. However, microbiological guidelines aimed at reducing faecal contamination along the food chain can contribute to a reduction in public health risks, including VTEC (Regulation (EC) No. 2073/2005). This is also in agreement with the EFSA scientific opinion on VTEC (EFSA, 2007), in which it was concluded that good hygiene practices at abattoirs and at processing plants, including monitoring for microbiological indicators (Enterobacteriaceae and generic *E. coli*), are the most effective methods for reducing the public health risks of VTEC related infections. However, while no specific criteria are in-place, if VTEC is confirmed positive in a ready-to-eat food product, the batch should be withdrawn/recalled from the market based on Regulation (EC) No. 178/2002 (*food shall not be placed on the market if it is unsafe*). In addition, it should also be noted that while a restricted range of serotypes (i.e. O157, O26, O103, 091, 0145 and O111) may present a public health risk, isolates of these serotypes are not necessarily pathogenic (i.e. they may not contain some or all virulence genes) when recovered from food, or animals.

Table 4.3. VTEC in foods and drinks tested at retail level

FOOD TYPE	RTE STATUS	TESTED	POSITIVE
FRESH MEAT			
Poultry	Raw	1	0
MEAT PRODUCTS			
Bovine	RTE	8	0
	Raw	7	0
	NS	7	0
Pork	RTE	4	0
	Raw	2	0
	NS	4	1
Poultry	RTE	15	0
	Raw	4	0
	NS	3	0
Sheep	RTE	2	0
Unspecified meat and other meat	RTE	7	0
	Raw	3	0
	NS	5	0

FOOD TYPE	RTE STATUS	TESTED	POSITIVE
OTHER FOODS			
Milk and milk products	RTE	9	0
	Raw	1	0
Fish and fishery products	RTE	1	0
	NS	3	0
Fruit and vegetables	Raw	7	0
Fruit and vegetable juices	RTE	5	0
Other food	RTE	14	0
	NS	3	0
Overall Total		**115**	**1 (0.87%)**
consisting of			
Total RTE		**65**	**0**
Total Raw		**25**	**0**
Total NS		**25**	**1 (4%)**

(Source: DAFF & OFMLS)

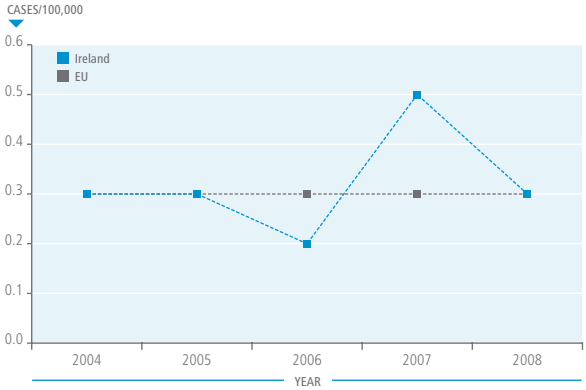
RTE: Ready-to-eat, NS: Not specified

5. LISTERIOSIS

HUMAN

In 2008, 13 cases of human listeriosis were notified to the HPSC, a crude incidence rate of 0.3 per 100,000 population. This is a 38% reduction on the 21 human listeriosis cases previously notified in 2007, a crude incidence rate of 0.5 per 100,000 (Figure 5.1). The crude incidence rate for Ireland for 2008 concurs with the European average, also 0.3 per 100,000, unlike in 2007 when the crude incidence rate for Ireland exceeded the European average (based on notifications from 26 of the 27 Member States).

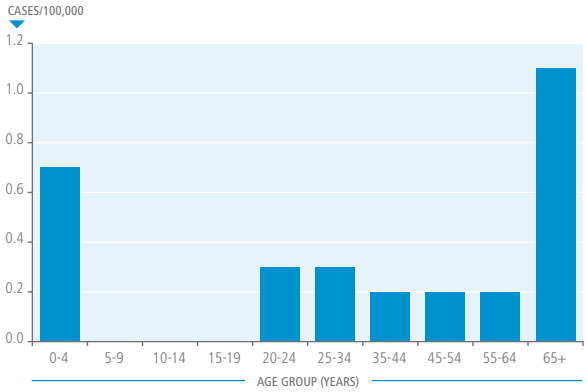
Figure 5.1. EU and Irish human listeriosis incidence rates (2004-2008)



(Source: HPSC & EFSA)

Out of the 13 cases of human listeriosis notified in 2008, two were neonatal and two were pregnancy related. One of the neonatal cases died as a result of infection, while one pregnancy resulted in miscarriage. The other nine cases of infection were all in adults, five of which were older than 65 years, three of which were suffering from underlying illness (Figure 5.2.). No information was available on the ninth adult case, however, no fatalities were reported among adults in 2008.

Figure 5.2. Age-adjusted incidence rate of listeriosis cases



(Source: HPSC)

In 2008, ten human *Listeria* spp. isolates were received by the NSRL and were serotyped as either serotype 1/2 or 4b (Table 5.1.)

Table 5.1. Listerosis notifications by case type and serotype

CASE TYPE	SEROTYPE 1/2	SEROTYPE 4B	NOT REFERRED FOR SEROTYPING	TOTAL
Adult or juvenile	3	3	3	9
Pregnancy-related	1	1	0	2
Neonatal	0	2	0	2
Total	**4**	**6**	**3**	**13**

(Source: HPSC & NSRL)

FOOD

The transmission of listeriosis is mainly associated with consumption of ready-to-eat foods which support the growth of *Listeria monocytogenes*. The zoonoses data reveal that 5,139 food samples were tested using the detection method (presence or absence) and 8,675 food samples were tested using the enumeration method (level of cfu per/g) in Ireland, in 2008 (Table 5.2). *L. monocytogenes* was detected in 0.63% of raw food and 3.17% of ready-to-eat food products in this year. The enumeration test revealed that three ready-to-eat food products (0.06%), one beef product, one hard cheese and one cereal/meal product, were reported to have levels of *L. monocytogenes* greater than 100 cfu/g. Two food products where the ready-to-eat status was not specified (0.06%), one pork product and one unspecified poultry product were reported to have levels of *L. monocytogenes* greater than 100 cfu/g. Under European legislation (Regulation (EC) No. 2073/2005 on the microbiological criteria for foodstuffs), *L. monocytogenes* must be absent in 25g of ready-to-eat foods intended for infants or special medical purposes. For all other ready-to-eat foods placed on the market, *L. monocytogenes* must not be present at levels greater than 100 cfu/g during their shelf-life.

Adequate refrigeration storage of ready-to-eat foods is particularly important with regard to the control of *Listeria monocytogenes*, since a strong correlation has been reported to exist between inadequate refrigeration (leading to the proliferation of *L. monocytogenes*) and the risk of listeriosis (FDA/USDA/CDC 2003; FAO/WHO, 2004). In light of this, a recent EFSA opinion on *L. monocytogenes* (EFSA, 2007) has recommended that the 'chill chain' should be improved in domestic homes and that dietary and storage advice should be readily available, particularly for the elderly.

Table 5.2. *L. monocytogenes* in foods at retail and processing level

			DETECTION METHOD		ENUMERATION METHOD	
FOOD TYPE	SAMPLING SITE	RTE STATUS	TESTED	POSITIVE	TESTED	> 100 CFI/G*
Bovine	Processing	RTE	28	0	0	0
		Raw	1	0	0	0
	Retail	RTE	43	1	212	1
		Raw	1	0	2	0
		NS	21	1	264	0
Pork	Processing	RTE	86	7	0	0
		Raw	2	0	0	0
	Retail	RTE	53	0	257	0
		Raw	7	0	8	0
		NS	115	2	615	1
Poultry	Processing	RTE	139	5	0	0
		Raw	20	0	0	0
	Retail	RTE	80	3	428	0
		Raw	1	0	2	0
		NS	53	0	897	1
Ovine	Processing	RTE	1	0	0	0
	Retail	RTE	3	0	34	0
		NS	3	0	25	0
Unspecified & mixed meats	Processing	RTE	11	1	0	0
	Retail	RTE	1	0	7	0
		Raw	1	1	1	0
		NS	3	0	5	0

FOOD TYPE	SAMPLING SITE	RTE STATUS	DETECTION METHOD TESTED	DETECTION METHOD POSITIVE	ENUMERATION METHOD TESTED	ENUMERATION METHOD > 100 CFI/G*
Milk	Processing	Raw	21	0	0	0
	Retail	RTE	1	0	7	0
		Raw	1	1	1	0
		NS	3	0	5	0
Cheese	Processing	NS	1,581	45	0	0
	Retail	RTE	60	2	241	1
Other dairy products	Processing	Raw	1,647	10	355	0
	Retail	RTE	73	0	220	0
Eggs	Retail	Raw	36	0	424	0
Egg products	Retail	Raw	2	0	3	0
		NS	1	0	4	0
Smoked fish	Processing	RTE	7	0	0	0
	Retail	RTE	17	2	29	0
Other fishery & seafood products	Processing	RTE	2	0	0	0
		NS	11	0	0	0
	Retail	RTE	34	0	211	0
		Raw	2	0	7	0
Soup, sauces & dressings	Retail	RTE	47	0	423	0
Cereals & meals	Retail	RTE	23	1	208	1
Fruit, vegetables & juices	Retail	NS	31	5	295	0
Ready-to-eat dishes	Retail	RTE	341	11	2,491	0
Infant formula	Processing	NS	260	0	0	0
Other foods	Retail	NS	144	0	505	0
Overall Total			**5,139**	**110 (1.95%)**	**8,675**	**5 (0.06%)**
consisting of						
Total RTE *(Percent Positive)*			**1,071**	**34** *(3.17%)*	**4,849**	**3** *(0.06%)*
Total Raw *(Percent Positive)*			**1,741**	**11** *(0.63%)*	**802**	**0** *(0%)*
Total NS *(Percent Positive)*			**2,325**	**55** *(2.37%)*	**3,024**	**2** *(0.07%)*

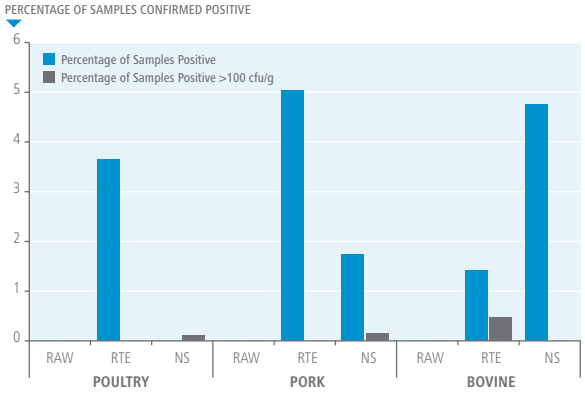
(Source: DAFF, Dept of Communications, Marine & Natural Resources (DCMNR) & OFMLs)

*The number of samples tested for *L. monocytogenes* using both the detection method and the enumeration method is not known. For this reason, the relationship between the samples confirmed positive using either method is unknown.

RTE: Ready-to-eat, NS: Not specified

L. monocytogenes was detected in ready-to-eat poultry (3.65%), pork (5.04%) and bovine meat (1.41%), but not on any raw meat samples tested in 2008 (Figure 5.3.). From the samples tested using the enumeration technique, only one ready-to-eat meat sample (0.47%), a bovine meat sample, was found to have a concentration of *L. monocytogenes* greater than 100cfu/g. *L. monocytogenes* was not isolated from any ovine samples tested in this year.

Figure 5.3. Percentage of *L. monocytogenes* recovered from raw, not specified and ready-to-eat samples of poultry, pork and bovine foodstuffs



(Source: DAFF, DCMNR & OFML)

The number of samples tested for *L. monocytogenes* using both the detection method and the enumeration method is not known. For this reason no correlation can be made between results obtained using both methods

Ovine samples omitted due to a reported absence of *L. monocytogenes* in all samples tested

RTE: Ready-to-eat, NS: Not specified

6. TUBERCULOSIS

HUMAN

A total of 470 human tuberculosis (TB) cases were notified in 2008, and ten out of the 209 culture confirmed TB cases were bovine TB (caused by *Mycobacterium bovis*) (Table 6.1.). This equates to a crude incidence rate of 0.2 per 100,000 population of *M. bovis* associated TB infection. This is a slight increase on previous years (2002-2007) in which a crude incidence rate of 0.1 per 100,000 was reported for TB cases for which *M. bovis* was reported to be the aetiological agent.

Table 6.1. Human TB notifications

	2000	2001	2002	2003	2004	2005	2006	2007	2008*
TB cases notified	395	381	408	407	431	450	465	480	470
Cases culture confirmed	249	212	239	262	279	283	317	315	209
Culture confirmed as:									
M. tuberculosis	233	204	234	250	268	275	309	305	177
M. bovis	2	4	5	5	5	4	5	6	10
M. africanum	4	1	0	0	0	1	1	2	0
Not specified	10	3	0	7	6	3	2	2	22

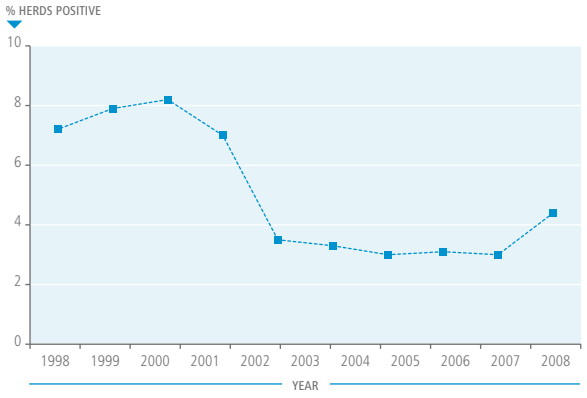
(Source: HPSC)

*2008 provisional data which may change

ANIMALS

Bovine TB is a notifiable animal disease in Ireland and an ongoing national eradication program means that all herds are subject to test and control measures under the Diseases of Animals Act No. 6/1966, and must comply with Council Directive 854/2004/EEC. In addition, all animals slaughtered are subject to full ante-mortem and post-mortem examination in accordance with Regulation (EC) No. 853/2004. The proportion of cattle herds in Ireland with bovine TB has increased in recent years from the 2006 figure of 3.04%, to 4.4% in 2007 and 5.97% in 2008 (Figure 6.1).

Figure 6.1. Annual bovine TB in Irish cattle herds based on tuberculin testing (1998-2008)



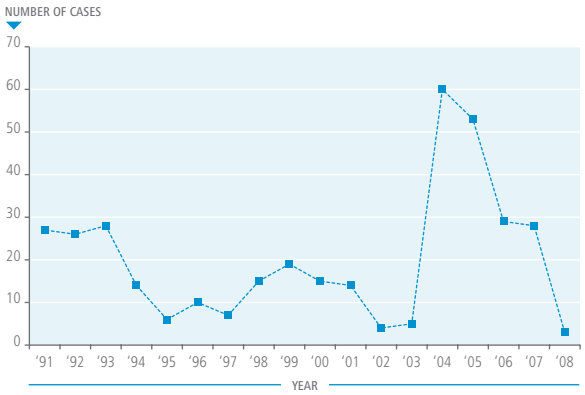
(Source: DAFF)

7. BRUCELLOSIS

HUMAN

Laboratories have been required to notify brucellosis cases since 2004, which has resulted in a significant increase in the number of annual notifications (Figure 7.1.). However, since the initial increase (2003, 2004) there has been a relative decline in the number of brucellosis cases, with 29 cases reported in 2006, 28 in 2007 and just 3 cases reported in 2008 (Table 7.1.).

Figure 7.1. Annual number of human brucellosis notifcations (1991-2008)



(Source: HPSC)

Table 7.1. Confirmed and probable cases of brucellosis (Ireland 2004-2008)

YEAR	CONFIRMED	PROBABLE	NOT SPECIFIED.
2004	2	57	1
2005	7	45	1
2006	4	25	0
2007	7	21	0
2008	2	1	0

(Source: HPSC)

The three 2008 cases were males in their forties and fifties, two of these cases were described as chronic, and the status (acute/chronic) of the third case was not reported. This is a crude incidence rate of 0.1 per 100,000 population compared to 0.7 per 100,000 in 2007.

In previous years, brucellosis notifications have been proportionally greater in males between the ages of 45-64 year. In 2008, the notifications were exclusively associated with males in this age bracket.

ANIMALS

Cattle

The last confirmed case of brucellosis in cattle in Ireland was in 2006.The percentage of herds testing positive serologically for brucellosis has been less than 0.25% since 2001, with 161 herds recorded in 2007 (0.1%) and 111 herds recorded in 2008 (0.1%). However, on the basis of further testing and detailed epidemiological investigations, all 111 herds with positive serological results in 2008 were found not to be infected with *Brucella* spp. The same applies to the 161 herds that tested positive in 2007.

Other animals

Ireland is officially free of ovine and caprine brucellosis, a disease caused by *B. melitensis*. Goats and sheep, more than cattle, are the natural hosts of *B. melitensis* which causes an illness with symptoms similar to *B. abortus*. A monitoring programme in sheep and goats is conducted by DAFF each year to demonstrate the absence of this disease. In 2008, a total of 25,000 goats and sheep were tested, and like previous years no positive animals were identified.

8.TRANSMISSIBLE SPONGIFORM ENCEPHALOPATHIES (TSES) AND VARIANT CREUTZFELDT-JAKOB DISEASE (VCJD)

HUMAN

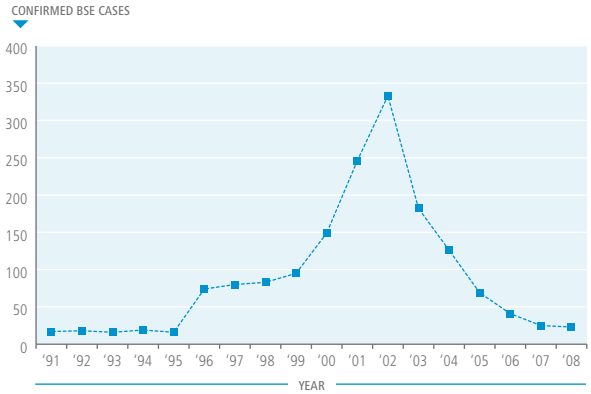
vCJD became a notifiable disease in Ireland in December 1996. A total of four cases of vCJD have been identified since then. These cases have involved two males and two females ranging from 20 to 64 years of age, with two individuals having resided in the United Kingdom for long periods of time. One of these cases was notified in 1999, two in 2005 and one in 2006. There were no new notifications in 2008.

ANIMALS

Bovine Spongiform Encephalopathy (BSE)

The first case of BSE in Ireland was identified in 1989 and in the mid 1990s the number of cases increased sharply. The number of cases in Ireland peaked in 2002 (333 cases), but since then a steady decline in BSE has been reported (Figure 8.1). This is mainly attributed to older animals in the national herd being replaced by younger animals, who were never exposed to contaminated feed. This trend continued in recent years as 41 positive cases were reported in 2006, 25 cases in 2007 and 23 cases in 2008. There were 780,942 BSE tests carried out in 2008.

Figure 8.1. Confirmed cases of BSE in cattle, 1991-2008



(Source: DAFF)

The increasing age profile of animals confirmed with BSE (Table 8.1.), along with the declining number of cases is convincing evidence that the enhanced BSE controls introduced in 1996 and early 1997 have been effective in bringing the disease under control.

Table 8.1. BSE cases in Ireland by year of birth and year confirmed

YEAR OF BIRTH	YEAR OF DIAGNOSIS 1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	TOTALS
1985						1								1
1986	2					1	2	1	1					7
1987	1	2	1				2					1		7
1988	3		2	1	2	1	4							13
1989	8	2	2		1	1	1	4	3		1			23
1990	20	11	2	2	1	1	9	2	1		1			50
1991	24	24	8	3	3	7	10	6	3	1	1	1		91
1992	16	28	25	13	8	8	10	8	13	2	1			132
1993		12	29	40	30	19	42	23	16	13	1	1		226
1994		1	14	30	44	52	54	34	20	22	7	8	6	292
1995				6	54	115	130	70	39	16	10	4	2	446
1996					6	40	62	32	21	7	15	6	10	199
1997							5	2	3		2		2	14
1998									4		1	1		6
1999							2		2	3				7
2000										3		2		5
2001										2	1		1	4
2002												1		1
2003													2	2
Totals	**74**	**80**	**83**	**95**	**149**	**246**	**333**	**182**	**126**	**69**	**41**	**25**	**23**	**1,526**

(Source: DAFF)

Of the 799 cases diagnosed since the beginning of 2002, only 25 infected animals were born after the introduction of enhanced controls in 1997, three of which were diagnosed in 2008. Each of these anomalous cases in young animals has been investigated extensively by DAFF, with various possible scenarios being examined including the possible carryover of infectivity on the farm due to residual contaminated feed and possible background levels of atypical BSE. Since intensive testing began in 2002, the vast majority of animals detected with the disease were born between 1993 and 1996, and these numbers are in decline each year.

Transmissable Spongiform Encephalopathy (TSE) testing in ovine and caprine animals

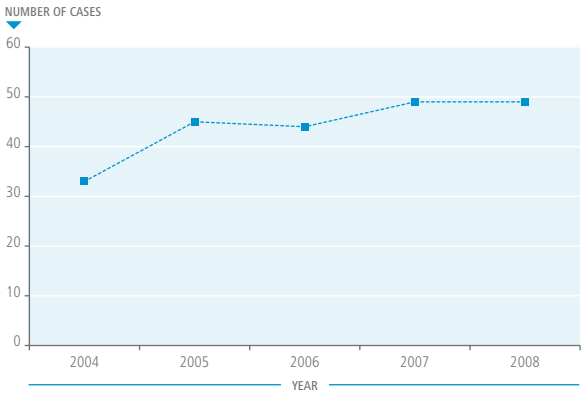
Similar to previous years, none of the 132 goats tested in 2008 were positive for TSE. However, 20 sheep (0.09%) out of 23,068 tested in this year were positive for TSE. This is a reduction on the 123 (0.21%) out of 59,025 sheep found positive in 2006, and 81 (0.17%) out of the 46,565 sheep found positive in 2007.

9. TOXOPLASMOSIS

HUMAN

Toxoplasmosis became a notifiable disease in Ireland in 2004 and since then 220 cases have been reported (Figure 9.1.). In 2008, 49 cases of toxoplasmosis were notified, giving a crude incidence rate of 1.2 per 100,000 population, the same rate as notified in 2007.

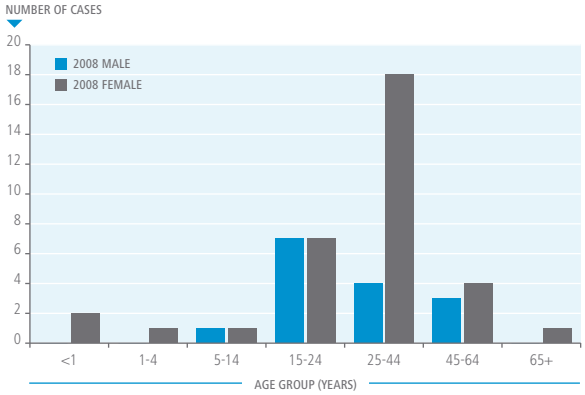
Figure 9.1. Annual number of toxoplasmosis notifications (2004-2008)



(Source: HPSC)

In 2008, two of the 49 cases were described as congenital, one of whom died. The remaining 47 cases ranged in age from 3 years to 75 years (median 30 years). Similar to previous years, a predominance of female cases existed in 2008 (69%) (Figure 9.2.). Most female cases were in the 25-44 years age group, which may have been linked to enhanced testing during pregnancy.

Figure 9.2. Age-sex distribution of toxoplasmosis notifications



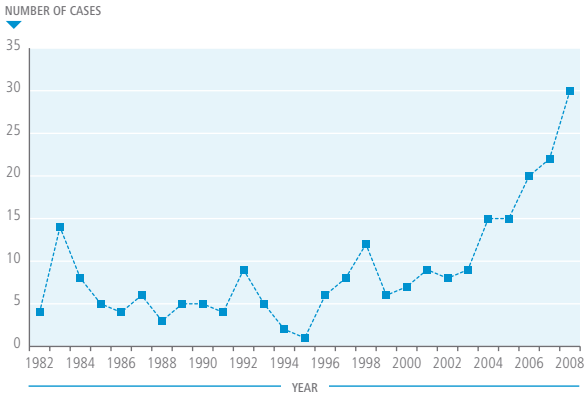
(Source: HPSC)

10. LEPTOSPIROSIS

HUMAN

The incidence of leptospirosis has been increasing in Ireland since 2002 with 30 cases recorded in 2008, compared to 22 in 2007 and 20 in 2006. Figure 10.1. shows the rise in the reported number of notifications in Ireland over the last number of years. The crude incidence for Ireland now stands at 0.7 per 100,000.

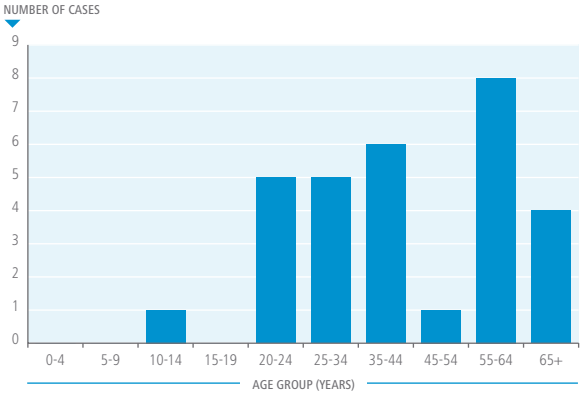
Figure 10.1. Annual number of human leptospirosis notifications reported (1982-2008)



(Source: HPSC & Dept of Health and Children)

Twenty seven cases out of the 30 reported in 2008 (90%) were male. The age distribution ranged from 13 to 85, with a mean age of 45 years and a median age of 37 years (Figure 10.2.). Seventeen cases required hospitalisation, two were reported as GP patients and the 'patient type' was not available for the remaining 11 patients. One elderly patient died as a result of their illness.

Figure 10.2. Age-sex distribution of human leptospirosis notification



(Source: HPSC)

Ten out of the 30 cases in 2008, were believed to have acquired their illness occupationally, five of these were farmers. Nine cases reported being involved in recent watersport activities; six canoeists, two outdoor swimmers and one tri-athelete. For three of these cases, these activities occurred outside of Ireland (two in Asia, one in the UK).

Species information was available for seven cases out of the 30 cases in 2008. Five cases were identified as Leptospira interrogans icterohaemorrhagiae (rat reservoir), three of whom reported river water contact. Two cases were infected with Leptospira interrogans hardjo (bovine reservoir), both of which were farming related. The species was not reported for the remaining 23 cases.

11. TRICHINOSIS (TRICHINELLOSIS)

HUMAN

Trichinosis became a notifiable human disease in Ireland in 2004, but no cases were reported until 2007, when two Polish nationals contracted the disease. The individuals had been on holiday in Poland where they consumed lightly smoked sausage that was also linked to a large outbreak in Poland at that time. There were no notifications for trichinosis in Ireland in 2008. In addition, an FSAI survey which sampled 10,247 slaughtered pigs from 33 Irish slaughterhouses between August, 2007 and January, 2009 found no samples positive for *Trichinella* spp. (FSAI, 2010).

12. YERSINIOSIS

HUMAN

In 2008, three cases of yersiniosis were reported, compared to six cases in 2007. This gives a crude incidence rate of 0.07 per 100,000 population, compared to 0.14 per 100,000 in 2007. All three cases were in the age group 45-64 years, two of which were female. One case was identified as *Y. enterocolitica* and two were not specified.

13. Q FEVER

HUMAN

Thirteen cases of Q fever were notified during 2008 compared to 17 in 2007 and 12 in 2006. This is a crude incidence rate of 0.5 per 100,000 population. The cases ranged in age from two to 96 years (mean age: 50 years; median age: 48 years).

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APPENDIX A
ZOONOSES-RELATED LEGISLATION

Diseases of Animals Act 1966, (No 6 of 1966), as amended

Infectious Diseases Regulation 1981 (S.I. No. 390 of 1981)

Council Directive 64/432/EEC of 26th June 1964 on animal health problems affecting intra-Community trade in bovine animals and swine (S.I. No. 270 of 1981)

Council Directive 91/68/EEC of 28th January 1991 on animal health conditions governing intra-Community trade in ovine and caprine animals (S.I. No. 762 of 1992)

Commission Decision No. 2000/96/EC of 22nd December 1999 on the communicable diseases to be progressively covered by the Community network under Decision N° 2119/98/EC of the European Parliament and of the Council (S.I. No. 2 of 1996)

Regulation (EC) No 999/2001 of 22 May 2001 laying down rules for the prevention, control and eradication of certain transmissible spongiform encephalopathies (S.I. No. 252 of 2008)

Directive 2003/99/EC of 17th December 2003 on the monitoring of zoonoses and zoonotic agents amending Council Decision 90/424 and repealing Council directive 92/117 (S.I. No. 154 of 2004)

Regulation (EC) No 2160/2003 of 17th November on the control of Salmonella and other specified food-borne zoonotic agents (S.I. No. 247 of 2008)

Regulation (EC) No 853/2004 of the European Parliament and of the Council of 29 April 2004 laying down specific hygiene rules for food of animal origin (S.I. No. 335 of 2006 and S.I. No. 910 of 2005)

Regulation (EC) No 2073/2005 of 15th November 2005 on microbiological criteria for foodstuffs (S.I. No. 335 of 2006 and S.I. No. 387 of 2006)

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