HSC Public Health Agency

Epidemiology of Gastrointestinal Infections in Northern Ireland

Annual Surveillance Report 2012

Contents

Key Points

- Notifications of food poisoning have continued to increase in 2012. The total number of notifications has increased by 46% over the last ten years.

- *Campylobacter* infections have continued to rise in 2012, with 1,211 laboratory reported cases compared to 1,175 in 2011 (3% increase), and overall laboratory reports increasing by 43% since 2008.

- The number of *Salmonella* infections reported annually continues to decrease with 146 laboratory reported cases of *Salmonella* in 2012, which represented a 13% decrease compared to 2011. *Salmonella* definitive phage type (DT) 193 was the most frequently reported phage type in 2012.

- *Cryptosporidium* infections increased by 26% in 2012 compared to 2011. The number of cases reported in 2012 (n=177) was the highest in the last eleven years.

- The number of laboratory confirmed cases of giardiasis have been at relatively high levels since 2009, and increased from 34 cases in 2011 to 50 in 2012 (43% increase).

- The number of sporadic cases of *E.coli* 0157 in 2012 increased from 36 in 2011 to 52 in 2012 (44% increase). Phage type 32 was the most commonly reported phage type. Over half of the sporadic cases reported in 2012 were admitted to hospital.

- 73% of confirmed cases of *E.coli* 0157 (n=145) were linked to outbreaks in 2012.

- Travel remains a significant risk factor for gastrointestinal infections. Over a third of *Salmonella* infections were related to travel in 2012.

- During 2012 the number of outbreaks of gastrointestinal infection increased. The majority were spread through person-to-person transmission.

- One confirmed foodborne outbreak associated with sandwiches (*Listeria monocytogenes*) was reported.

Introduction

The Public Health Agency (PHA) has a lead role in protecting the population from infection and environmental hazards through a range of core functions including communicable disease surveillance and monitoring, operational support & advice, and education, training & research.

The effective management of infectious disease depends on high quality surveillance. Surveillance of communicable gastrointestinal infectious disease provides timely information so that public health action can result. The range of surveillance outputs is broad and includes:

- Weekly surveillance – weekly internal report to the Health Protection team.
- Monthly/quarterly and annual returns – to various external bodies including the Food Standards Agency, European Centre and Disease Control, Epidemiology of Foodborne Infections Group and Department of Health, Social Services & Public Safety.
- Annual reports and data – published yearly on the PHA website.
- Analysis of outbreaks – descriptive and/or analytical epidemiological analysis

Epidemiological data is collated from a number of surveillance systems:

- Regional CoSurv for NI laboratories – all confirmed organisms/infections are reported electronically from seven laboratories to PHA.
- Reference laboratory reporting – selected organisms are sent by the local laboratories to reference laboratories in England for typing and the results are reported to PHA.
- Notifications of Infectious Diseases (NOIDS) – General Practitioners and Hospital Physicians have a statutory duty to report notifiable infectious diseases (e.g. food poisoning) to the PHA under the Public Health Act (NI) 1967.
- HP Zone – software package used in case management, contact tracing, and outbreak investigation & control. HP Zone facilitates the capture of data and collection of timely local and regional infectious disease intelligence.
- Enhanced surveillance systems for E. coli O157 - an active surveillance system is in place to assemble a comprehensive clinical, epidemiological and microbiological dataset on all primary indigenous E. coli 0157 cases.

This report presents the epidemiological data for selected gastrointestinal infections reported in Northern Ireland from 1 January 2012 to 31 December 2012.

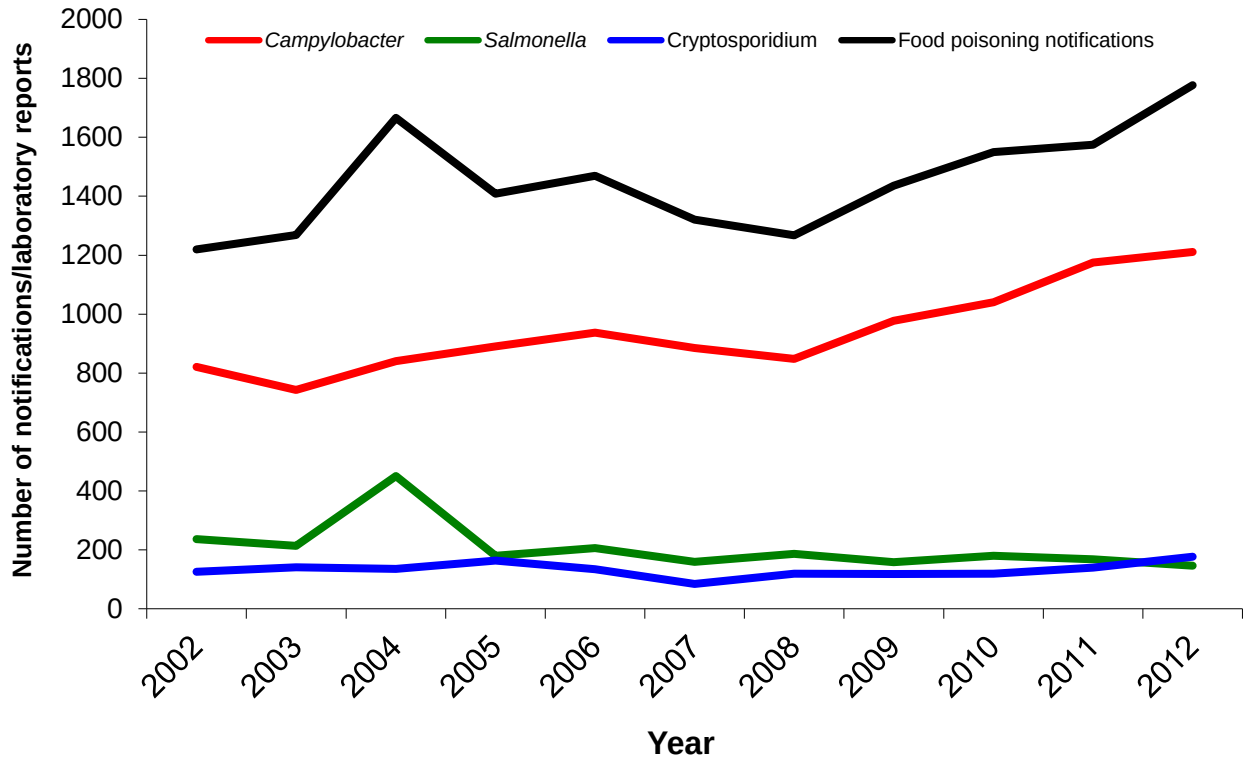
Food Poisoning

Since 2002 notifications of food poisoning have generally been increasing (Figure 1) with an increase of 46% since 2002. The sharp increase in notifications seen in 2004 is attributable to three *salmonella* outbreaks reported during the year.

Salmonella and *campylobacter* commonly cause food poisoning. *Salmonella* cases increased sharply in 2004 due to three outbreaks but have remained relatively stable since. In contrast, *campylobacter* infections have been increasing since 2008, in line with increasing food poisoning notifications.

Cryptosporidium is a protozoa that is commonly acquired through the consumption of contaminated water. Since 2002, cases of *cryptosporidium* have remained at a relatively stable level.

Fig 1: Food Poisoning: Notifications and Laboratory Reports, 2002 - 2012, Northern Ireland



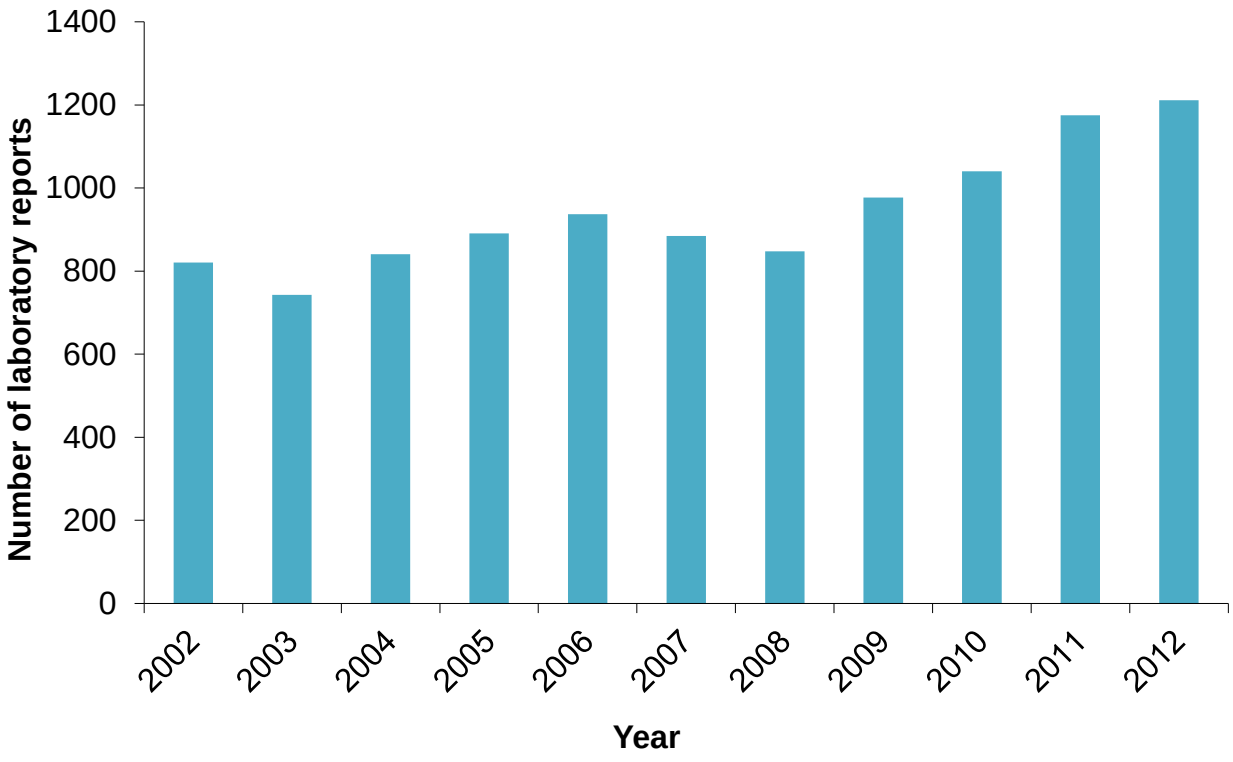
Campylobacter

Summary:
Number of cases 1,211
Incidence rate 66.4 per 100,000 population

Campylobacter is the most common bacterial cause of gastrointestinal infection in the UK and Europe. Campylobacteriosis is characterised by diarrhoea, abdominal pain, malaise, fever, nausea and vomiting. Symptoms generally last for only a few days.

In 2012, *campylobacter* remained the most common bacterial gastrointestinal infection in Northern Ireland with 1,211 laboratory reported cases, an increase of 36 cases compared to 2011 (n=1,175 cases). The incidence of *campylobacter* infections was 66.4 per 100,000 population. Since 2008, there has been a year-on-year rise in *campylobacter* cases with a 43% increase in 2012 compared to 2008 (Figure 2).

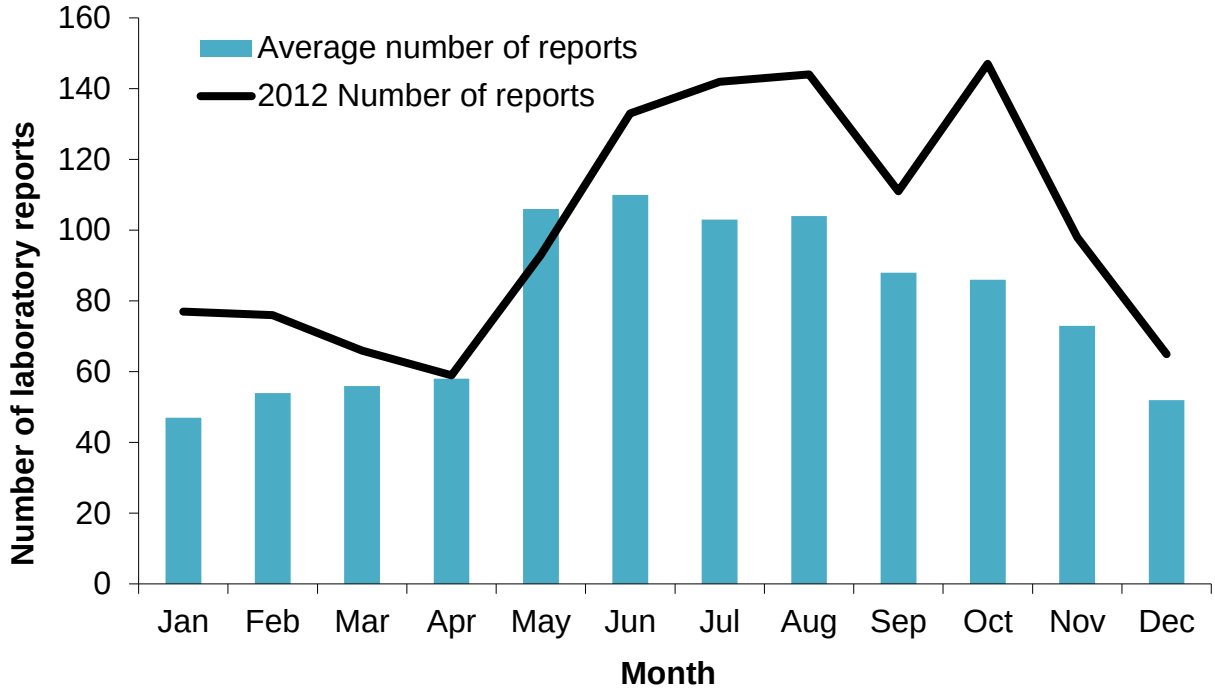
Fig 2: Laboratory Reports of *Campylobacter*, 2002 - 2012, Northern Ireland



Cases of *campylobacter* follow a seasonal pattern. Over the previous 10 years (2002-2011) cases have risen in May, peaked in June, and gradually declined from September onwards (Figure 3).

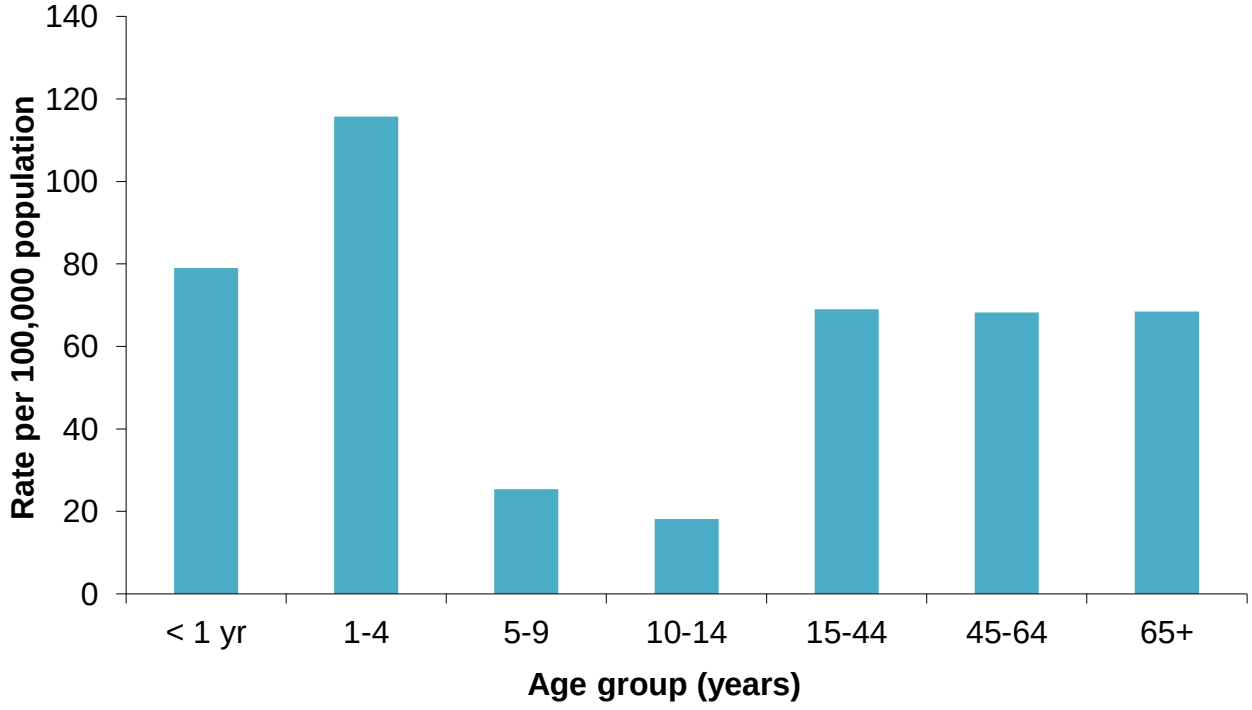
In 2012 a variation on this seasonal pattern was seen. Cases increased sharply in May and did not peak until August with numbers falling in September. A second peak then occurred in October with 147 cases, compared to the previous October average of 80 cases.

Fig 3: Monthly laboratory reports of Campylobacter, 2012, Northern Ireland



As in 2011 the highest incidence rate of laboratory reported *campylobacter* infections in 2012 was in the 1-4 year old age group (115.7 per 100,000 population) (Figure 4). In 2012 57% of reported cases were in males (n=692) compared with 52% (n=614) in 2011.

Fig 4: Laboratory Reports of Campylobacter, Age-Specific Rate (per 100,000 population), 2012, Northern Ireland



Salmonella

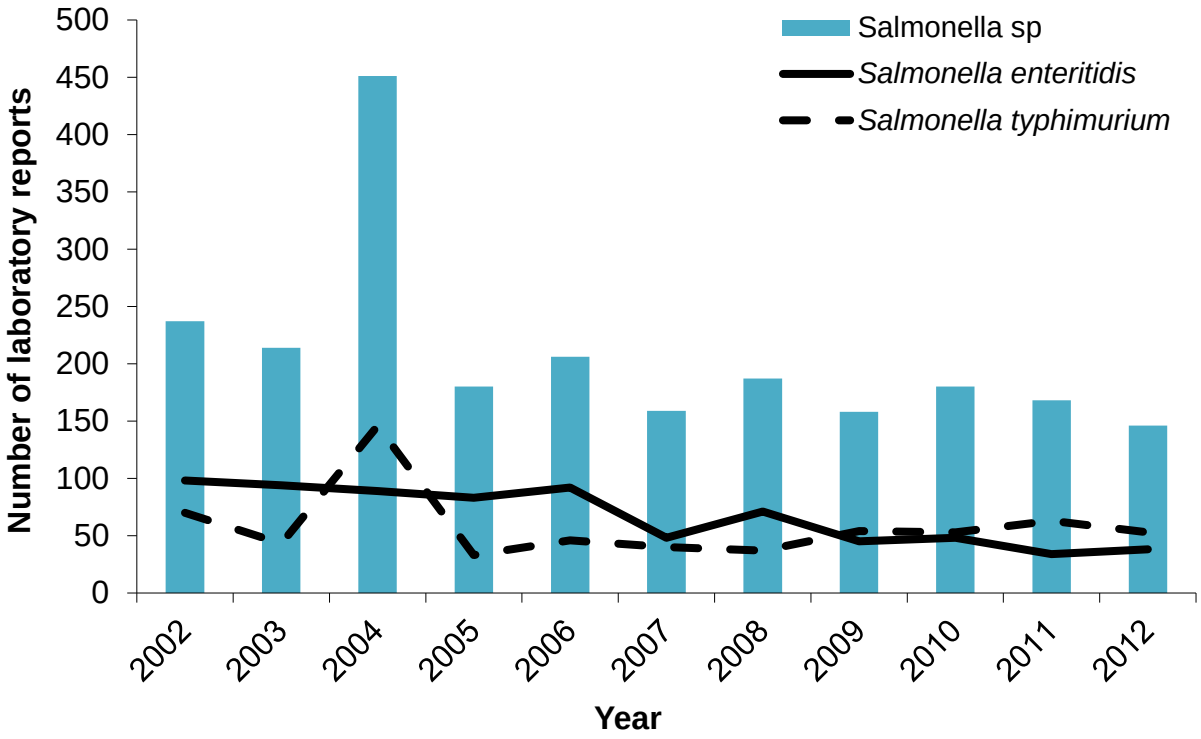
Summary
Number of cases: 146
Incidence rate: 8.0 per 100,000 population

Salmonella infections are one of the most commonly reported causes of bacterial gastrointestinal infections across Europe. *Salmonella* infection is characterised by abdominal pain, diarrhoea, fever, nausea, headache and occasionally vomiting. Dehydration amongst vulnerable populations such as infants, the immunocompromised and the elderly can be severe.

In 2012, there were 146 laboratory reported cases of *salmonella*. This represented a 13% decrease compared to 2011 (n=168). The incidence of *salmonella* infections was 8.0 per 100,000 population.

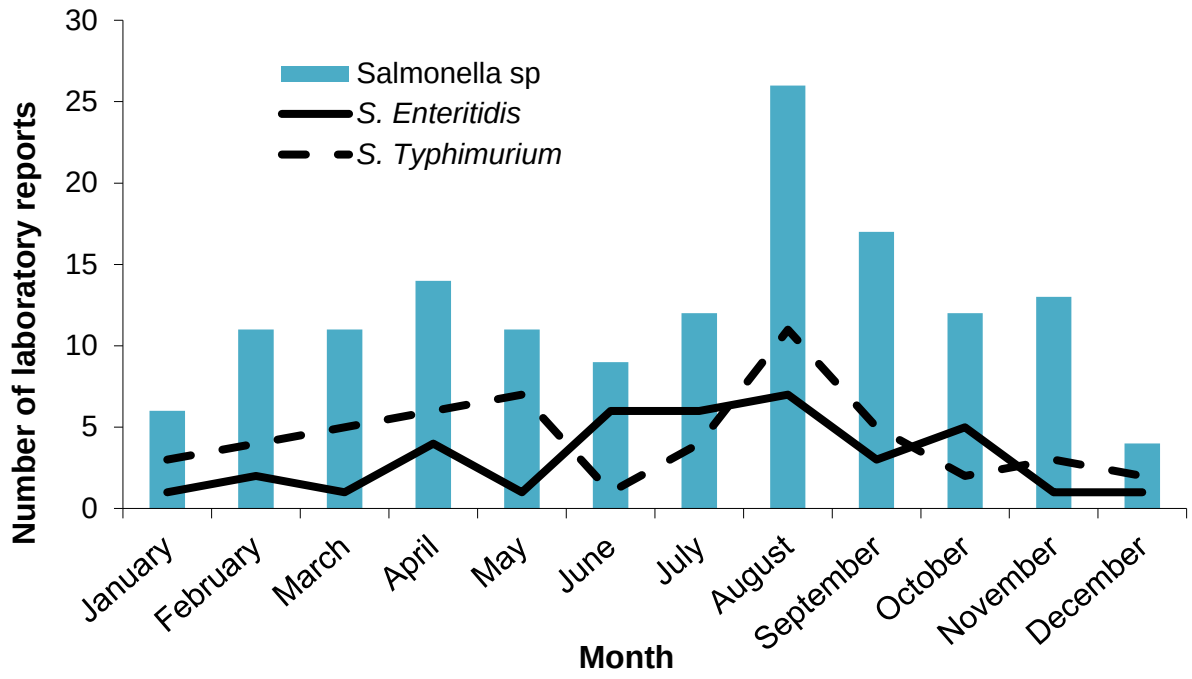
Since 2002 the number of cases reported has been generally decreasing (with the exception of 2004) with a 38% decrease from 2002 to 2012. The increase in cases in 2004 is accounted for by several outbreaks: DT 104, *Salmonella* Virchow and *Salmonella* Newport outbreaks occurred in 2004 and accounted for more than half of the 451 cases reported that year (Figure 5).

Fig 5: Laboratory Reports of Salmonella, 2002- 2012, Northern Ireland



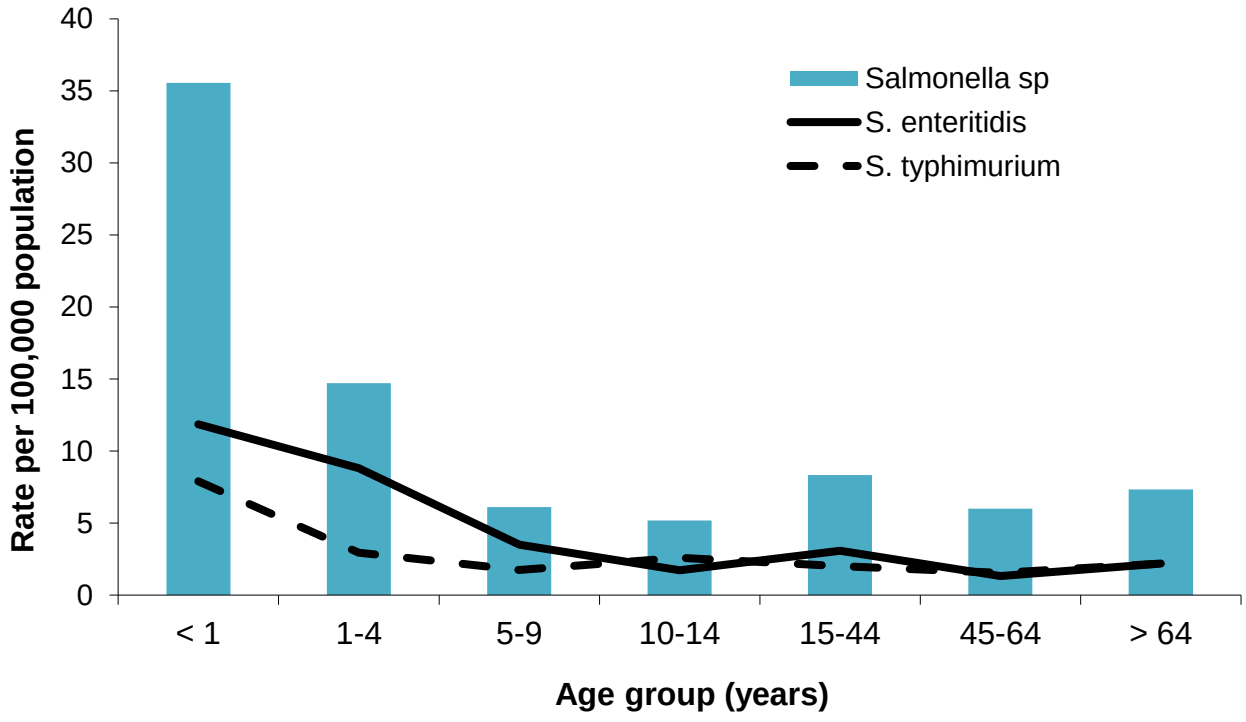
Cases of *salmonella* follow a seasonal pattern. In 2012 cases peaked in August with 26 cases reported. This increase is in line with previous years. Cases of the most common serotypes *S.* Enteritidis and *S*. Typhimurium also peaked in August (Figure 6). This is in contrast to 2011 when *S.* Enteritidis peaked in September and *S*. Typhimurium peaked in August.

Fig 6: Monthly laboratory reports of Salmonella, 2012, Northern Ireland



In 2012 52% of the cases were male. The highest incidence rate in 2012 was in the under 1 year old age group (36 per 100,000 population) however this represented only 6% of all cases (Figure 7). This is consistent with the age distribution seen in 2011. Cases of *S.* Enteritidis and *S*. Typhimurium both peaked in the under 1 year old age group.

Fig 7: Laboratory reports of Salmonella, age specific rates (per 100,000 population), 2012, Northern Ireland



In 2012 *S.* Enteritidis and *S*. Typhimurium remained the two most frequently reported serotypes in Northern Ireland, accounting for 26% and 36% of cases respectively. Cases of *S*. Typhimurium have exceeded cases of *S.* Enteritidis since 2009. Serotypes for which more than one report was received from 2008 to 2012 are presented in Table 1.

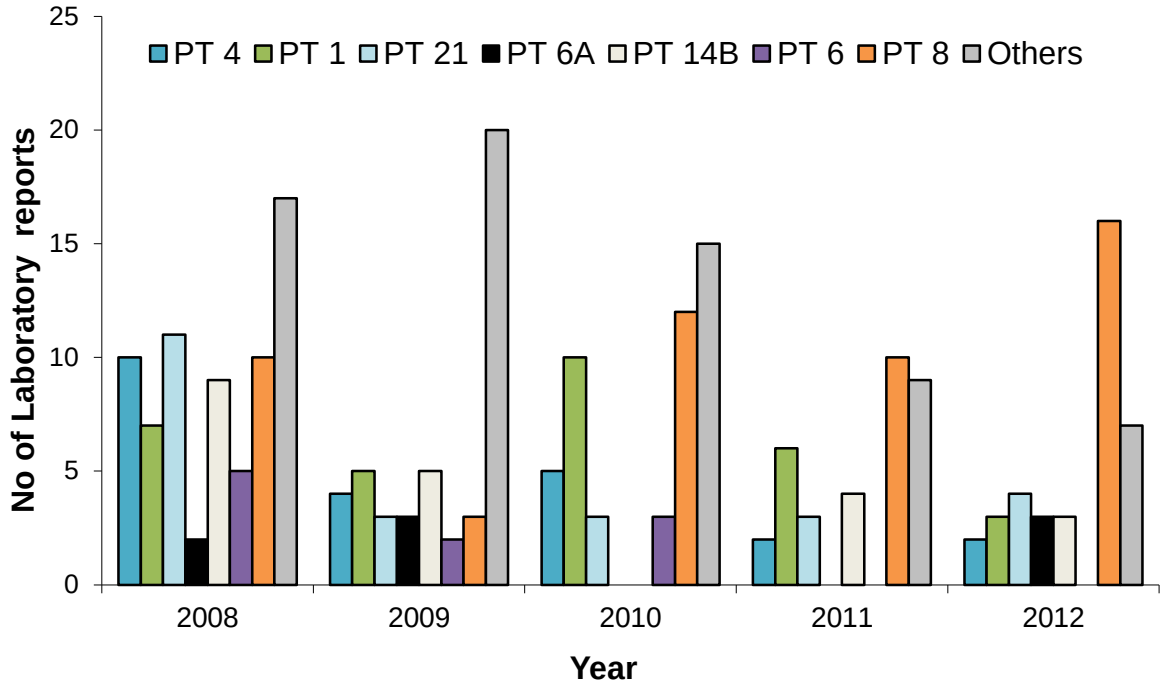
Table 1: Frequently reported serotypes of Salmonella, 2008 - 2012, Northern Ireland

2008*		2009*		2010*		2011*		2012*	
Total salmonella	**187**	**Total salmonella**	**158**	**Total salmonella**	**180**	**Total salmonella**	**168**	**Total salmonella**	**146**
enteritidis	71	*enteritidis*	45	*enteritidis*	48	*enteritidis*	34	*enteritidis*	38
typhimurium	37	*typhimurium*	54	*typhimurium*	53	*typhimurium*	63	*typhimurium*	53
virchow	8	*newport*	6	*java*	5	*tokoin*	4	*newport*	5
agona	5	*virchow*	4	*infantis*	5	*infantis*	4	*mikawasima*	5
stanley	5	*javiana*	3	*bareilly*	5	*dublin*	4	*infantis*	4
kentucky	4	*kottbus*	3	*saint-paul*	4	*newport*	3	*stanley*	4
oranienburg	4	*oranienburg*	3	*haifa*	4	*montevideo*	3	*bredeney*	3
dublin	2	*saint-paul*	3	*newport*	3	*stanley*	3	*oranienburg*	2
hadar	2	*arizonae*	2	*montevideo*	3	*oranienburg*	2	*montevideo*	2
infantis	2	*gold-coast*	2	*mbandaka*	3	*glostrup*	2	*agona*	2
kottbus	2	*heidelberg*	2	*kottbus*	3	*braenderup*	2	*bareilly*	2
newport	2	*java*	2	*arizonae*	3	*virchow*	2	*dublin*	2
saint-paul	2	*muenchen*	2	*stanley*	2	*saint-paul*	2	*kentucky*	2

*Totals include 1 S. typhi and 1 S. paratyphi in 2008; 2 S. paratyphi in 2010; 1 paratyphi and 1 typhi in 2011 and 1 paratyphi (travel to India) in 2012

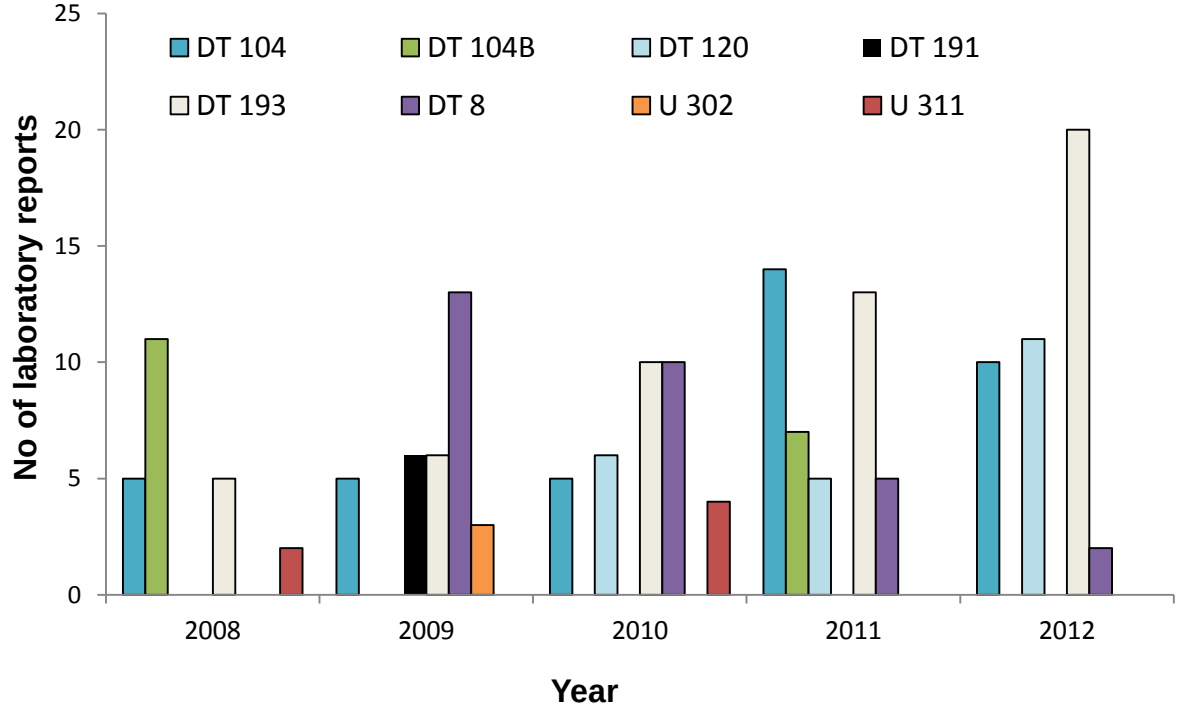
In 2012, *S.* Enteritidis PT 8 was the predominant phage type reported accounting for 42% of *S.* Enteritidis cases. PT 8 has been the predominant phage type of *S.* Enteritidis since 2010 however it previously accounted for a smaller proportion of cases (14% in 2008, 0% in 2009). PT 21 was the predominant phage type in 2008 (15%) but has accounted for relatively few cases since (Figure 8)

Fig 8: Laboratory Reports of Salmonella enteritidis phage types, 2008 - 2012, Northern Ireland



S. Typhimurium definitive phage type (DT) 193 has shown a steady increase since 2008 and accounted for 38% of all *S*. Typhimurium cases (n=20) in 2012. *S*. Typhimurium DT 120 (n=11) and DT 104 (n=10) were also frequently reported in 2012, as in previous years. *S*. Typhimurium DT 8 cases have steadily fallen since a peak in 2009 with an 85% decrease over the period (Figure 9).

Fig 9: Laboratory Reports of Salmonella typhimurium phage types reported from 2008 –2012 in Northern Ireland



Cryptosporidium

Summary
Number of cases: 177
Incidence rate: 9.7 per 100,000 population

Cryptosporidium is a protozoal parasite that causes a diarrhoeal illness that can last between 2 days and 4 weeks. The infection can be a more serious illness in people who are immunosuppressed. *Cryptosporidium* is found in lakes, streams, rivers, untreated water and occasionally in swimming pools.

In 2012, there were 177 laboratory reported cases of *cryptosporidium* infection. This was a 26% increase on 2011 (n=140) and represented the highest number of cases reported in the last eleven years (Figure 10). The incidence rate of *cryptosporidium* infection was 9.7 per 100,000 population. No outbreaks of *cryptosporidium* were identified in 2012.

Fig 10: Laboratory Reports of Cryptosporodium, 2002 - 2012, Northern Ireland

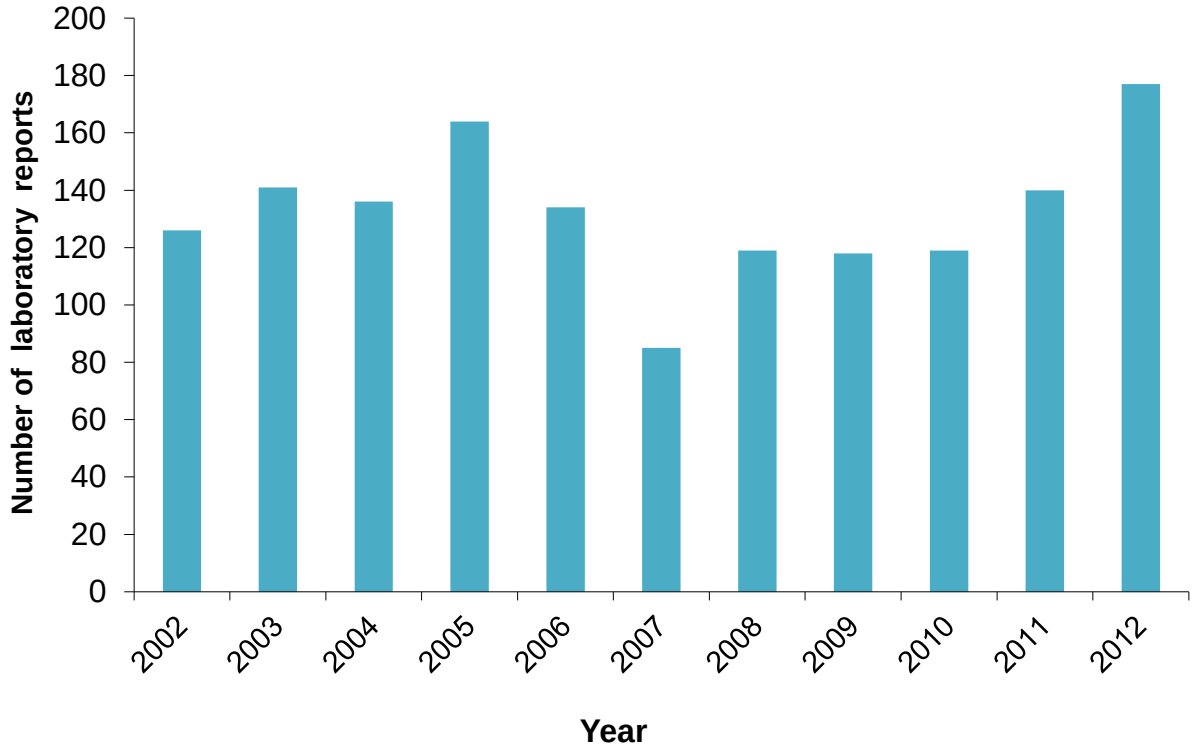
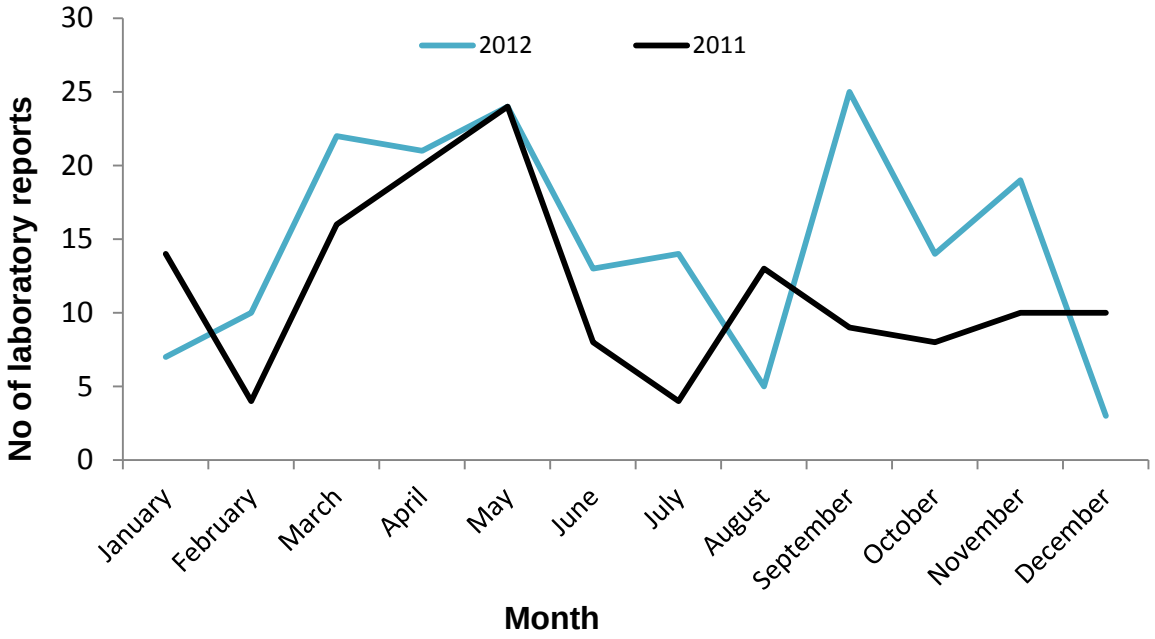
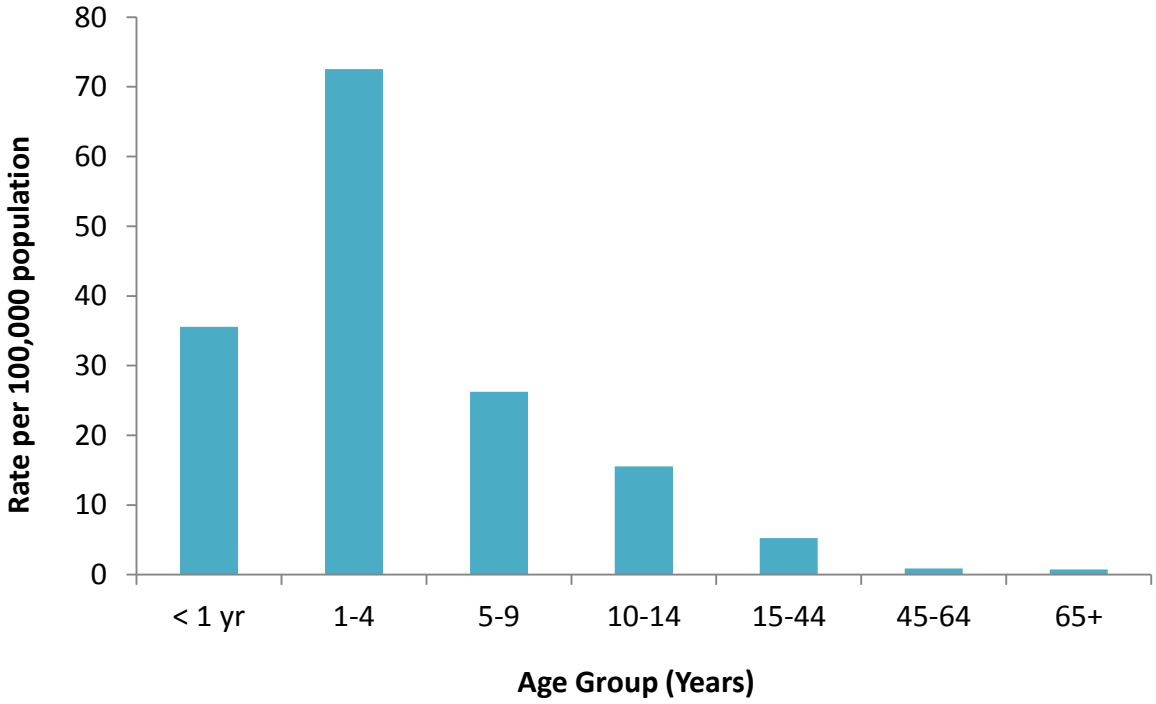


Fig 11: Monthly laboratory reports of Cryptosporidium, 2011 - 2012, Northern Ireland



In 2012, *cryptosporidium* infections displayed a seasonal pattern with two peaks in Spring (May) and Autumn (September) This pattern is similar to that seen across the UK. In 2011 the Autumn peak was not as evident (Figure 11).

Fig 12: Laboratory Reports of Cryptosporidium, Age-Specific Rate (per 100,000 population), 2012, Northern Ireland



The highest incidence rate in 2012 was in the 1-4 years old age group (72.5 per 100,000 population) with 47% of cases in this age group (Figure 12). A similar age

distribution was seen in 2011 when 42% of cases were in this age group (incidence rate 73 per 100,000 population). Overall 54% of cases were males in 2012 however in the 1-4 year age group this proportion increased to 64%.

Giardiasis

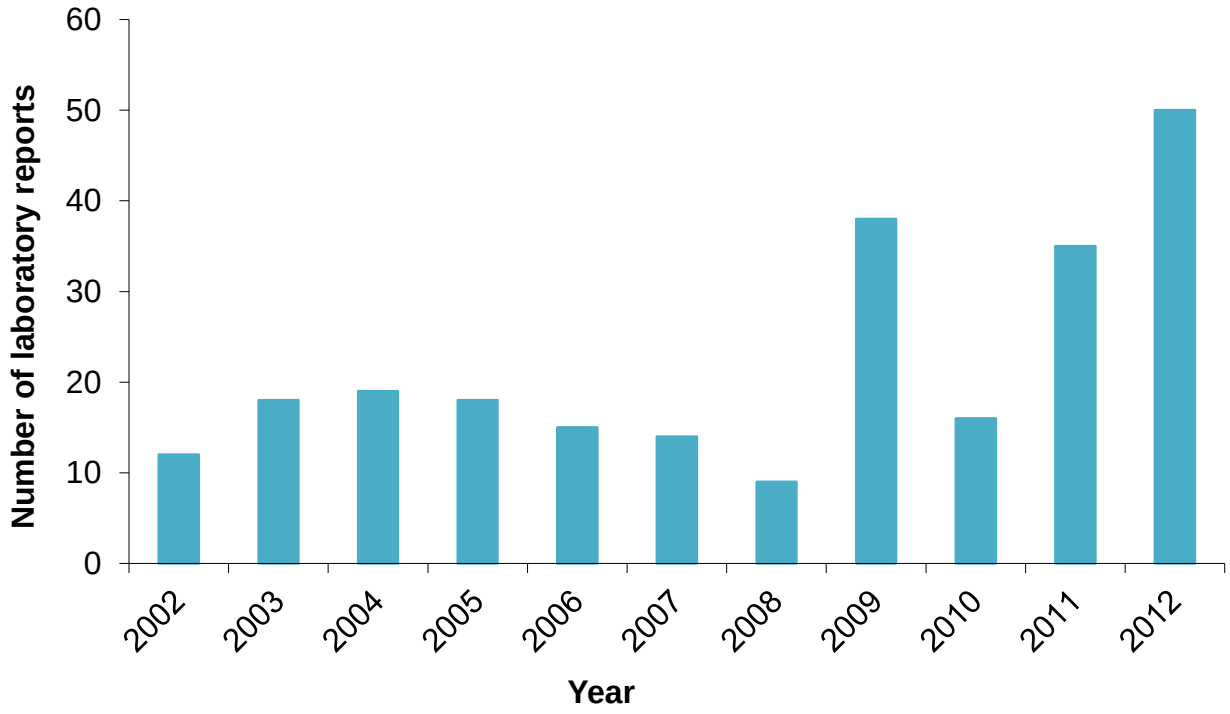
Summary
Number of cases: 50
Incidence rate: 2.7 per 100,000 population

Giardia lamblia is a protozoan parasite that causes giardiasis. The parasites are found in the gut of both humans and animals. Giardiasis can cause diarrhoea, abdominal cramps and flatulence. Up to a quarter of cases can be asymptomatic.

In 2012, there were 50 laboratory confirmed cases of giardiasis. This represented the highest number of cases reported since 2009. The incidence rate was 2.7 per 100,000 population.

Prior to 2009 there was a long-term decline in Giardia infections. This has changed in recent years with relatively high numbers reported in three out of the past four years (Figure 13). Similar patterns have been described in England and Wales. No outbreaks of giardiasis took place in 2012.

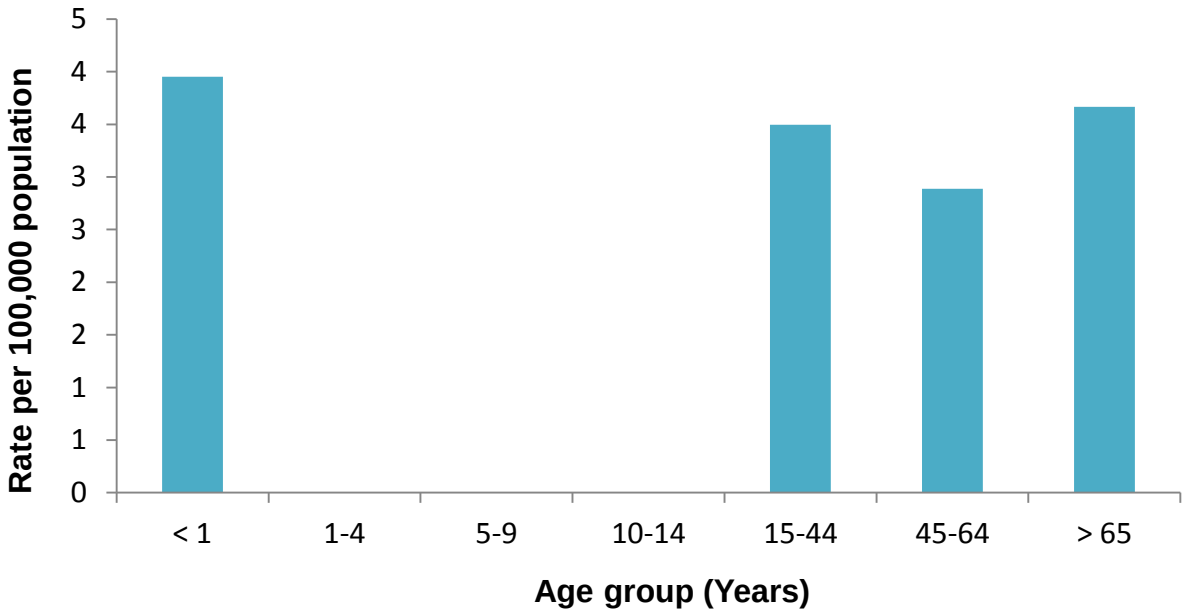
Fig 13: Laboratory reports of Giardia lamblia (all specimen types), 2002 - 2012, Northern Ireland



The highest incidence rate in 2012 was in the under 1 year old age group (4.0 per 100,000 population) however this represents only one case. The next highest age

group is in the over 65 year old with a rate of 3.7 per 100,000 population (Figure 14).

Fig 14: Laboratory reports of Giardia lamblia (all age groups), 2012, Northern Ireland



E coli O157

Summary
Number of cases: 198
Incidence rate of cases: 10.3 per 100,000 population
Number of sporadic cases: 52
Incidence rate of sporadic cases: 2.9 per 100,000 population

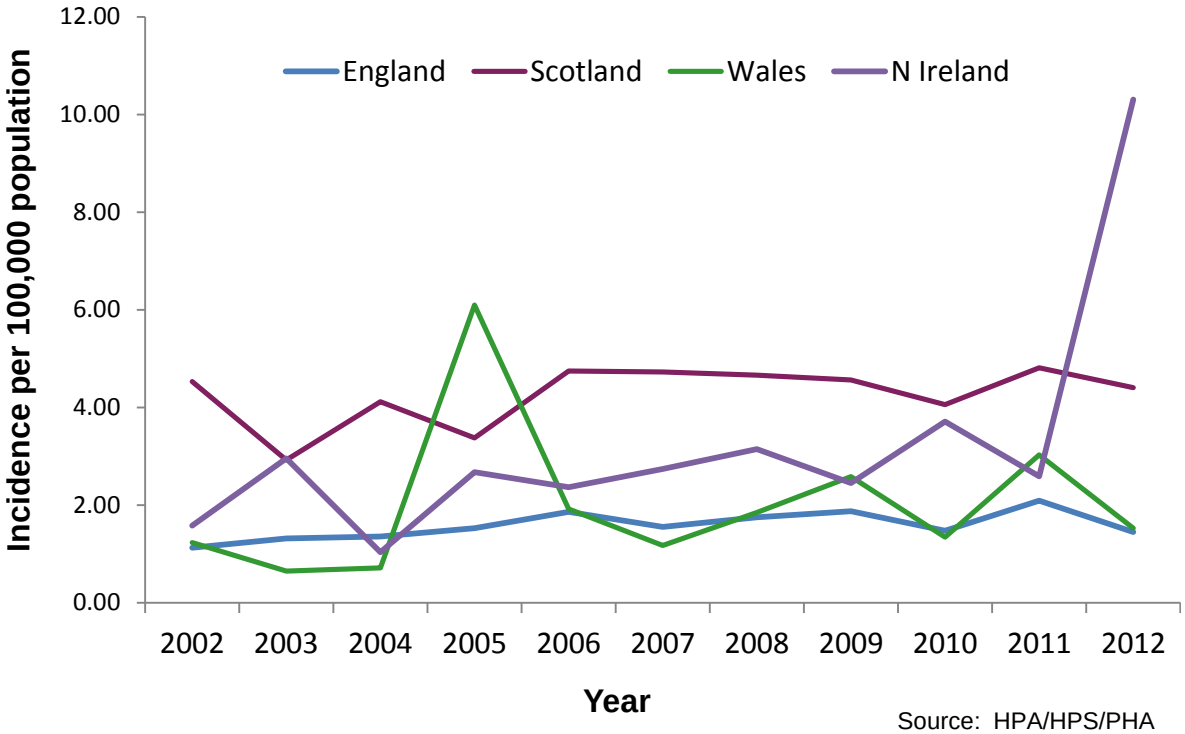
Escherichia coli 0157 is a bacterial cause of gastroenteritis. Symptoms can range from mild gastroenteritis to severe bloody diarrhoea. A small proportion of patients can develop haemolytic uraemic syndrome (HUS) which is a serious life-threatening condition resulting in kidney failure.

In 2012, 198 laboratory confirmed cases of *E. coli* O157 were reported. This represents the largest number of cases ever reported in Northern Ireland. Out of 198 laboratory confirmed cases, 188 (94%) were positive for Verocytotoxigenic (VTEC) genes.

The total incidence of VTEC in 2012 in Northern Ireland (10.3 per 100,000 population) was much higher than in previous years (Figure 15). The total incidence rate increased almost threefold in 2012 compared to the previous year. Excluding cases linked to outbreaks from the analysis reveals a much smaller increase in incidence. In 2012, incidence rates for all *E. coli* O157 cases were higher in Northern Ireland than in England & Wales (2.98 per 100,000 population) and

Scotland (4.45 per 100,000 population). This can largely be attributed to the outbreaks that occurred in 2012.

Fig 15: Laboratory Reports of Verotoxin E. coli 0157 per 100,000 population, United Kingdom 2002-2012



Source: HPA/HPS/PHA

There were a total of 145 confirmed cases linked to outbreaks of *E. coli* O157 in 2012. This represents 73% of all confirmed *E. coli* O157 cases in that year.

Sporadic Cases

Sporadic cases of E Coli 0157 are cases that have gastrointestinal symptoms and are not epidemiologically linked to an outbreak. In 2012, 52 sporadic cases were reported with one additional asymptomatic case in a family cluster. The incidence of sporadic cases in 2012 (2.9 per 100,000 population) was higher than 2011 (2.0 per 100,000 population).

The highest incidence of sporadic cases was in the Western Health and Social Care Trust with an incidence of 6.1 per 100,000 population in 2012. This relatively high rate was partially attributable to a number of family clusters (Table 2).

Total incidence in 2012 (2.9 per 100,000 population) was higher than that in 2011(4.0 per 100,000 population), but lower than that seen in 2010 (Table 3). The highest age specific incidence rate of sporadic cases was in children aged 0-4 years old and this is consistent with the pattern seen in 2010 and 2011 (Figure 16; Table 3).

Table 2: Number of E. coli O157 sporadic cases and incidence per 100,000 population by Trust Northern Ireland, 2010-2012**

HSCT	Number of cases*			Annual incidence per 100,000 population		
	2010	2011	2012	2010	2011	2012
Belfast	3	2	4	0.9	0.6	1.1
South Eastern*	6	4	5	1.7	1.2	1.4
Northern	12	13	17	2.6	2.8	3.7
Southern	12	11	8	3.4	3.1	2.2
Western	14	6	18	4.8	2.0	6.1
Northern Ireland	**47**	**36**	**52**	**2.6**	**2.0**	**2.9**

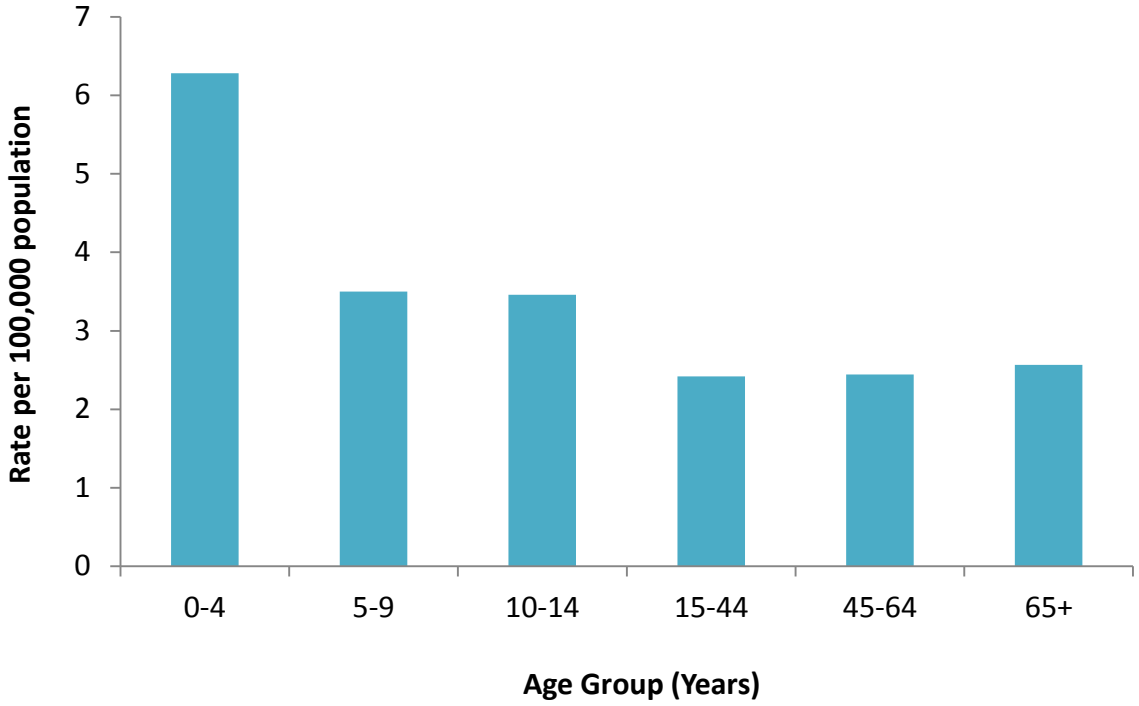
* *Number of cases is based on the Trust in which the reporting laboratory is based.*

** *Sporadic cases are those that have gastrointestinal symptoms and are not epidemiologically linked to an outbreak*

Table 3: Distribution of E. coli O157 sporadic cases and incidence per 100,000 population by age group, Northern Ireland, 2010-2012

Age Group	Number of cases			Annual incidence per 100,000 population		
	2010	2011	2012	2010	2011	2012
0-4	13	5	8	10.5	4.0	6.3
5-9	5	1	4	4.5	0.9	3.5
10-14	2	3	4	1.7	2.5	3.5
15-44	17	8	18	2.3	1.1	2.4
45-64	8	16	11	1.8	3.6	2.4
65+	2	3	7	0.8	1.1	2.6
Total	**47**	**36**	**52**	**2.6**	**2.0**	**2.9**

Fig 16: Distribution of E. coli O157 sporadic cases by age group, Northern Ireland, 2012



Phage type data was available for 47 of the 52 laboratory confirmed sporadic cases in 2012 (Table 4). The most commonly reported phage type was PT 32 accounting for 40% of cases. PT 8 and PT 31 accounted for 19% and 21% of cases respectively. One PT 89 was reported in 2012. This is the first time this phage type has been identified in Northern Ireland.

Verocytotoxigenic gene type was available for 46 of the 52 laboratory confirmed sporadic cases in 2012. No samples of E Coli 0157 were positive for VT1 only genes. In common with previous years, VT2 was the dominant verotoxin in 2012. The number of cases positive for VT2 only genes in 2012 increased by 44% compared to 2011 (Table 5).

Numbers of cases in other verotoxin types (VT1; VT1+2; VT+) have remained largely unchanged since 2010.

Table 4: Distribution of phage types of laboratory confirmed sporadic cases of E .coli 0157 by year, Northern Ireland 2008-2012

Phage type	2008	2009	2010	2011	2012	Total
1	0	0	1	0	1	2
2	1	0	0	0	1	2
4	0	0	0	1	0	1
8	8	8	13	11	9	49
14	0	0	0	0	1	1
21	0	0	0	0	0	0
24	0	0	0	0	0	0
31	2	9	1	3	10	25
32	9	9	9	7	19	53
33	3	0	0	0	0	3
34	0	0	4	0	0	4
43	2	0	0	0	0	2
49	0	0	0	0	0	0
51	0	1	0	0	0	1
54	0	0	0	1	2	3
89	0	0	0	0	1	1
21/28	4	1	2	4	3	14
RDNC*	0	1	2	2	0	5
Total	**29**	**29**	**32**	**29**	**47**	**166**

** RDNC – reacts but does not conform*

Table 5: Verotoxin (VT) genes of laboratory confirmed sporadic cases of E .coli 0157, Northern Ireland 2002-2012

VT	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
VT1	0	0	0	0	0	0	0	0	2	0	0	2
VT2	17	32	15	22	33	34	18	23	16	15	32	257
VT1+2	6	3	2	4	8	4	11	11	12	12	11	84
VT+	2	0	0	6	1	0	5	8	4	3	3	32
Total	**25**	**35**	**17**	**32**	**42**	**38**	**34**	**42**	**34**	**30**	**46**	**375**

The most common symptoms reported by sporadic cases were diarrhoea (83%) and abdominal pain (85%) (Table 6). Approximately two thirds of cases experienced bloody diarrhoea. Cases in the 10-14 year age group were the most likely to report bloody diarrhoea with all five cases reporting these symptoms. Over 65 year olds were also relatively likely to report bloody diarrhoea (86% of cases).

Hospital admissions occurred in all age groups in 2012. Over half of the sporadic cases (60%) were admitted to hospital in 2012. Cases in the 0-4 year old age group were most likely to be hospitalised (88% of age group hospitalised). Over half of cases were hospitalised in the 10-14; 15-44 and 65+ years age groups (Table 7).

Table 6: Symptoms experienced by E. coli O157 sporadic cases, Northern Ireland, 2012

Symptom	Number	Percentage
Diarrhoea	43	83
Vomiting	21	40
Nausea	32	62
Abdominal pain	44	85
Blood in stools	33	63
Fever	14	27

Table 7: Hospitalisation of sporadic E. coli O157 cases by age group, Northern Ireland, 2012

Age group	Number of cases for whom questionnaire was received	Number of cases who visited GP	Number of cases who attended hospital	Number of cases hospitalised	% of age group hospitalised
0-4	8	7	7	7	88
5-9	3	3	1	1	33
10-14	5	4	3	3	60
15-44	18	11	12	12	67
45-64	11	8	6	4	36
65+	7	5	3	4	57
Total	**52**	**38**	**32**	**31**	**60**

Travel-Associated Gastrointestinal Infections

Gastrointestinal infections are the most frequently reported travel-associated infectious disease. Some infections are more likely to be acquired in low-income regions where hygiene and sanitary infrastructure may be less robust (e.g. *Giardia*) while others can be acquired anywhere in the world (e.g. *Campylobacter; Salmonella*).

Any data on travel-associated gastrointestinal infections must be interpreted with caution. Travel reporting for most gastrointestinal infections is often incomplete and variable between organisms. The data presented is likely to be an underestimate of the total burden of gastrointestinal disease associated with travel.

The infection most commonly associated with travel in 2012 was *Salmonella* with 36% of cases (n=53/146) likely to have been acquired through travel. Similar levels were reported in 2011 and this proportion has decreased from a peak of 45% (n=85/187) in 2008. Countries most frequently associated with acquisition of *Salmonella* infection are Spain, Mexico, Turkey, Thailand and Malta (Figure 17).

Fig 17: Travel associated salmonella laboratory reports among Northern Ireland residents in 2012 by presumed country of acquisition

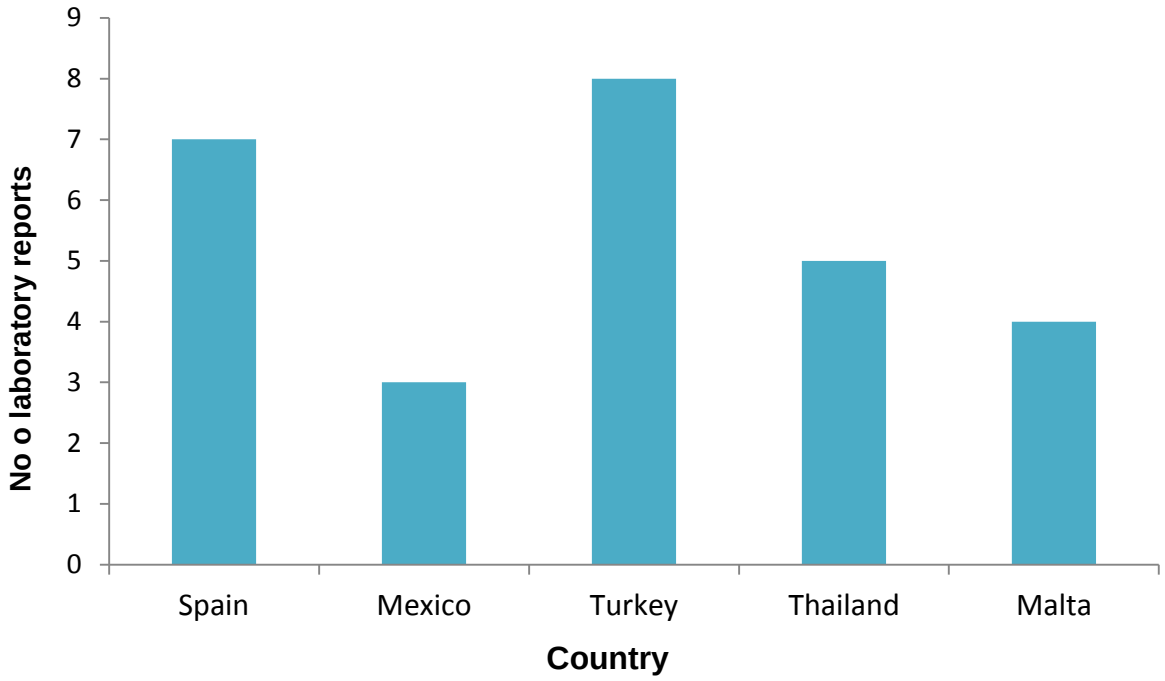


Table 8: Laboratory reports of salmonella and countries where infections are thought to have been acquired, 2012, Northern Ireland

Serotype	Number of reports received	Number thought to have been acquired abroad	Countries visited
S. agama	1	0	
S. agona	2	0	
S. arizonae	1	0	
S. bareilly	2	1	Portugal
S. braenderup	1	0	
S. brandenburg	1	1	Benidorm
S. bredeney	3	0	
S. carrau	1	1	Mexico
S. chester	1	0	
S. dublin	2	0	
S. enteritidis	38	24	Spain (5), Turkey (5) Tunisia (3), Others (11)
S. haifa	1	0	
S. infantis	4	2	Malta (1), Uganda (1)
S. kentucky	2	2	Malta (1), Turkey (1)
S. kottbus	1	1	Turkey
S. mikawasima	5	1	Majorca
S. montevideo	2	1	Tanzania
S. muenster	1	0	
S. napoli	1	0	
S. newport	5	1	Cambodia
S. oranienburg	2	1	Canada
S. panama	1	0	
S. paratyphi a	1	1	India
S. pomona	1	0	
S. potsdam	1	1	Turkey
S. sp	1	0	
S. stanley	4	3	Thailand (3)
S. typhimurium	53	12	Spain (2), Thailand (2), France (2), Others (6)
S. unnamed	6	0	
S. wandsbek	1	0	
Grand Total	**146**	**53**	

A notable proportion of Giardia (24%) and Cryptosporidium infections (15%) were associated with travel in 2012. A much smaller proportion of *Campylobacter* (2%) and *E Coli 0157* infections (2%) were associated with travel (Table 9).

Table 9: Other gastrointestinal infections acquired abroad, 2012, Northern Ireland

Organism	Number of reports received	Number thought to have been acquired abroad	Countries visited
Campylobacter	1211	21 (2%)	France (5), India, Poland, Portugal (6), Spain (7), Turkey
Cryptosporidium	177	27 (15%)	Cyprus, France (2), Germany, Gran Canaria, India, ROI, Italy (3), Magaluf, Majorca, Menorca, Salou (2), Spain (7), Turkey (4), Uganda
E. coli O 157	197	5 (2%)	Cyprus, Portugal, ROI (3)
Giardia	50	12 (24%)	California, France, Holland, India, Spain (5), Turkey, UAE, USA
Total	**1,635**	**66 (4%)**	

Foodborne Gastrointestinal Outbreaks

In 2012 one confirmed foodborne gastrointestinal outbreak was reported. This was an outbreak of *Listeria monocytogenes* with six associated cases**.** Sandwiches were the suspected vehicle of transmission for this outbreak.

A total of 247 other gastrointestinal outbreaks were reported in 2012. The suspected mode of transmission for these outbreaks was mostly person-to-person spread, with the mode of transmission still under investigation in a small number.

The number of gastrointestinal outbreaks reported increased compared to 2011 when no foodborne outbreaks and 118 other gastrointestinal outbreaks were reported.

The most common causative agent of the other gastrointestinal outbreaks was norovirus, which accounted for 117 (47%) outbreaks. A further two outbreaks were caused by norovirus plus another organism (*C. difficile*). Four outbreaks in residential institutions had *C. difficile* alone implicated as a causative agent.

During 2012 there were a total of 73 hospital outbreaks affecting at least 548 people; 164 residential institution outbreaks affecting at least 2,693 people; and a further 10 outbreaks linked to other sites (e.g. nursery, school/university) affecting at least 588 people (Table 10).

Table 10: Total distribution and location of outbreaks 2012

Foodborne outbreaks				
Area	**Location**	**Organism**	**Suspect vehicle**	**No. ill**
Northern	Hospital	Listeria	Sandwiches	6
Other gastrointestinal outbreaks				
Area	**No of outbreaks reported**	**Location**	**Organism***	**No ill**
Belfast	15	Hospital	Norovirus	133
	2	Hospital	Norovirus & C.difficile	4
	7	Hospital	Nil identified	34
	14	Residential Institution	Norovirus	222
	1	Residential Institution	Norovirus & C difficile	30
	1	Residential Institution	Rotavirus	11
	1	Residential Institution	C difficile	4
	15	Residential Institution	Nil identified	207
	1	Other (Training Centre)	Nil identified	29
	2	Other	E coli 0157	304
South Eastern	15	Hospital	Norovirus	105
	1	Hospital	C difficile	2
	6	Hospital	Nil identified	41
	13	Residential Institution	Norovirus	311
	13	Residential Institution	Nil identified	175
Northern	3	Hospital	Norovirus	59
	3	Hospital	Viral	19
	21	Residential Institution	Norovirus	553
	3	Residential Institution	C difficile	3
	20	Residential Institution	Nil identified	206
	1	Other (Entertainment)	Norovirus	12
	2	Other (School/University)	Nil identified	31
Southern	5	Hospital	Norovirus	53
	4	Hospital	Nil identified	25
	18	Residential Institution	Norovirus	383
	1	Residential Institution	Rotavirus	14
	20	Residential Institution	Nil identified	211
	1	Other (Nursery)	Rotavirus/Cryptosporo dium	50
	1	Other (Entertainment)	Nil identified	119
Western	2	Hospital	Norovirus	19
	9	Hospital	Nil identified	50
	1	Hospital	C difficile	4
	9	Residential Institution	Norovirus	172
	14	Residential Institution	Nil identified	191
	1	Other (Entertainment)	Nil identified	10
	1	Other (Nursery)	Rotavirus	3
	1	Other (Prison)	Norovirus	30

*In Norovirus outbreaks once the causative organism is identified it is not normal practice for all other symptomatic individuals to be tested. Therefore in norovirus outbreaks the number of symptomatic individuals is considerably in excess of the number of laboratory confirmed cases.

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