

SURVEILLANCE OF INFECTIOUS INTESTINAL (IID), ZONOTIC AND VECTORBORNE DISEASE, AND OUTBREAKS of INFECTIOUS DISEASE IN IRELAND



A quarterly report by the Health Protection Surveillance Centre in collaboration with the Departments of Public Health

Quarter 1–2016

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This is the first quarterly report for 2016 produced by the Gastroenteric Unit of the Health Protection Surveillance Centre.

The production of this quarterly report would not be possible without the valuable input and commitment from the Directors of Public Health, Specialists in Public Health Medicine, Surveillance Scientists, Clinical Microbiologists, General Practitioners, Hospital Clinicians, Infection Control, Environmental Health and laboratory personnel, and other professionals who provide the data for the HPSC's surveillance systems.

Note: Data are collected and analysed using the Computerised Infectious Disease Reporting (CIDR) system. The data in this report are provisional and will not be regarded as final until all returns are received and data have been validated.

OUTBREAK SURVEILLANCE

Table 1. General Outbreaks of Infectious Intestinal Disease (IID) in Q1, 2016

Month	HSE area	Location	No. ill *	No. Hosp.	Date Onset	Suspect mode of transmission	Disease
Jan	M	Hospital	7	-	-	P-P & AB	Noroviral infection
Jan	M	Hospital	1	-	-	P-P & AB	AIG
Jan	SE	Hospital	16	-	02/01/2016	P-P	Noroviral infection
Jan	SE	Hospital	10	-	15/01/2016	P-P	AIG
Jan	NE	School	38	-	14/01/2016	P-P	AIG
Jan	M	Nursing home	12	0	14/01/2016	NK	Noroviral infection
Jan	M	Nursing home	4	-	-	NK	AIG
Jan	NW	Comm. Hosp/Long-stay unit	17	-	14/12/2015	P-P	AIG
Jan	NW	Comm. Hosp/Long-stay unit	3	-	20/01/2016	P-P & AB	AIG
Jan	M	Hospital	7	-	16/01/2016	NK	Noroviral infection
Jan	M	Comm. Hosp/Long-stay unit	9	0	22/01/2016	NK	Noroviral infection
Jan	W	Comm. Hosp/Long-stay unit	19	-	26/01/2016	P-P	Noroviral infection
Jan	M	Hospital	3	-	-	NK	Noroviral infection
Jan	S	School	70	-	23/01/2016	FB	AIG
Feb	SE	Nursing home	9	-	30/01/2016	P-P	AIG
Feb	W	Hospital	8	8	30/01/2016	P-P	Noroviral infection
Feb	M	Hospital	4	0	-	P-P & AB	Noroviral infection
Feb	E	Nursing home	43	0	26/01/2016	P-P & AB	Noroviral infection
Feb	SE	Comm. Hosp/Long-stay unit	10	-	31/01/2016	P-P	Noroviral infection
Feb	W	Hospital	2	2	09/02/2016	P-P	AIG
Feb	W	Comm. Hosp/Long-stay unit	3	0	10/02/2016	P-P	AIG
Feb	NW	Nursing home	-	-	-	P-P	AIG
Feb	SE	Hospital	18	-	12/02/2016	P-P	Noroviral infection
Feb	E	Nursing home	19	-	13/02/2016	NK	AIG
Feb	S	Nursing home	24	0	11/02/2016	P-P	AIG
Feb	S	Nursing home	27	1	15/02/2016	P-P	Noroviral infection
Feb	NW	Nursing home	11	-	15/02/2016	Not Specified	AIG
Feb	NW	Comm. Hosp/Long-stay unit	6	0	-	P-P	AIG
Feb	NE	Comm. Hosp/Long-stay unit	9	0	19/02/2016	P-P & AB	Noroviral infection
Feb	NW	Nursing home	6	-	-	Not Specified	AIG
Feb	S	Nursing home	29	0	23/02/2016	P-P	Noroviral infection
Feb	E	Nursing home	6	-	24/02/2016	P-P	Noroviral infection
Mar	S	Nursing home	16	1	27/02/2016	P-P	Noroviral infection
Mar	S	Hospital	30	-	--	P-P	Noroviral infection
Mar	S	Nursing home	27	0	28/02/2016	P-P	Noroviral infection
Mar	E	Not Specified	2	0	06/03/2016	P-P	AIG
Mar	E	Nursing home	15	0	09/03/2016	P-P & AB	Noroviral infection
Mar	E	Nursing home	28	0	06/03/2016	P-P & AB	Noroviral infection
Mar	E	Residential institution	-	-	09/03/2016	NK	Noroviral infection
Mar	SE	Comm. Hosp/Long-stay unit	6	-	25/02/2016	P-P	AIG
Mar	S	Nursing home	12	0	09/03/2016	P-P	Astrovirus
Mar	SE	Hospital	5	-	11/03/2016	P-P	Noroviral infection
Mar	S	Hospital	16	-	08/03/2016	P-P	Noroviral infection
Mar	S	School	338	0	29/02/2016	P-P	AIG
Mar	E	Hospital	20	-	07/03/2016	P-P & AB	Noroviral infection

Month	HSE area	Location	No. ill *	No. Hosp.	Date Onset	Suspect mode of transmission	Disease
Mar	SE	Comm. Hosp/Long-stay unit	9	1	12/03/2016	P-P	Noroviral infection
Mar	NE	Nursing home	3	-	07/03/2016	P-P	Clostridium difficile
Mar	E	Nursing home	30	-	20/03/2016	P-P	Noroviral infection
Mar	W	Residential institution	27	0	21/03/2016	P-P	Noroviral infection
Mar	NE	Hospital	5	-	26/03/2016	P-P	AIG
Mar	NE	Residential institution	9	-	25/03/2016	P-P	AIG
Mar	E	Nursing home	63	-	20/03/2016	P-P	Noroviral infection
Mar	SE	Hospital	20	-	24/03/2016	P-P	Noroviral infection

P-P denotes Person-to-Person transmission, FB denotes foodborne, WB denotes waterborne; AB denotes airborne; AIG denotes Acute Infectious Gastroenteritis (unspecified); VTEC denotes infection with Verotoxigenic *E. coli*; NK=unknown

* Total numbers ill does not include asymptomatic cases

Table 2. Family Outbreaks of Infectious Intestinal Disease (IID) in Q1, 2016

Month	HSE area	Location	No. ill *	No. Hosp.	Date Onset	Suspect mode of transmission	Disease
Jan	MW	Private house	1	1	25/12/2015	P-P	VTEC
Jan	SE	Extended family	4	0	22/12/2015	NK	Giardiasis
Jan	SE	Extended family	2	2	12/05/2015	P-P & Animal	Salmonella
Jan	SE	Private house	2	0	14/11/2015	NK	Cryptosporidium
Jan	SE	Extended family	2	0	19/01/2016	P-P	Salmonella
Feb	E	Private house	3	0	01/01/2016	WB	VTEC
Feb	NE	Private house	3	-	27/01/2016	FB	Campylobacter
Feb	SE	Private house	2	1	04/02/2016	P-P	VTEC
Mar	M	Private house	1	0	26/02/2016	NK	VTEC
Mar	W	Private house	2	-	02/02/2016	P-P & Animal	VTEC
Mar	W	Private house	2	-	04/02/2016	Animal contact	Cryptosporidium
Mar	M	Not Specified	1	0	18/02/2016	NK	VTEC
Mar	MW	Private house	-	-	08/02/2016	P-P	VTEC
Mar	NE	Private house	2	-	04/02/2016	WB	Cryptosporidium
Mar	M	Private house	-	-	03/03/2016	NK	Cryptosporidium
Mar	SE	Not Specified	-	-	-	NK	VTEC
Mar	SE	Private house	1	-	12/02/2016	NK	Giardiasis
Mar	S	Private house	4	0	27/02/2016	P-P & WB	Cryptosporidium
Mar	SE	Private house	2	1	20/02/2016	P-P & Animal	VTEC
Mar	SE	Private house	-	-	09/03/2016	P-P & Animal	Cryptosporidium
Mar	SE	Not Specified	-	-	-	Not Specified	VTEC
Mar	M	Private house	-	0	23/03/2016	Not Specified	VTEC

P-P denotes Person-to-Person transmission, FB denotes foodborne, WB denotes waterborne; AB denotes airborne; AIG denotes Acute Infectious Gastroenteritis; VTEC denotes infection with Verotoxigenic *E. coli* NK denotes unknown

* Total numbers ill does not include asymptomatic cases

Table 3. Non-IID Outbreaks in Q1, 2016

Month	HSE area	Type of outbreak	Location	No. ill *	No. Hosp.	Date Onset	Suspect mode of transmission	Organism
Jan	NE	General	Residential institution	-	-	23/12/2015	P-P	RSV
Jan	E	Family	Private house	3	2	20/11/2014	P-P	Tuberculosis
Jan	E	General	Hospital	2	-	04/01/2016	P-P & AB	Influenza
Jan	W	General	Residential institution	13	3	29/12/2015	P-P	Influenza
Jan	S	General	Residential institution	6	2	01/01/2016	P-P & AB	Acute respiratory infection
Jan	S	General	Nursing home	6	0	02/01/2016	P-P & AB	RSV
Jan	S	General	Comm. Hosp/Long-stay unit	9	0	08/01/2016	P-P & AB	RSV
Jan	SE	General	Nursing home	13	1	10/01/2016	P-P & AB	Influenza
Jan	E	Family	Private house	3	-	10/01/2016	P-P & AB	Mumps
Jan	E	General	Nursing home	21	0	04/01/2016	P-P & AB	RSV
Jan	E	General	Residential institution	9	1	31/12/2015	P-P & AB	Human metapneumovirus
Jan	SE	General	Comm. Hosp/Long-stay unit	13	1	06/01/2016	P-P	Human metapneumovirus
Jan	M	General	Hospital	3	-	-	P-P	Influenza
Jan	NW	General	Community outbreak	6	5	01/09/2013	P-P	Tuberculosis
Jan	E	Family	Private house	-	-	09/01/2016	NK	Hepatitis A
Jan	SE	General	Nursing home	9	1	09/01/2016	P-P & AB	RSV
Jan	E	Family	Private house	2	0	28/01/2015	P-P & AB	Suspected Pertussis
Jan	NW	General	Comm. Hosp/Long-stay unit	6	0	07/01/2015	NK	Acute respiratory infection
Jan	NW	General	Comm. Hosp/Long-stay unit	2	-	-	P-P	RSV
Jan	E	Family	Private house	2	0	03/12/2015	P-P & AB	Mumps
Jan	SE	Family	Private house	2	0	07/01/2016	P-P & AB	Suspected Mumps
Jan	W	Family	Private house	3	2	-	P-P	Influenza
Feb	W	General	Hospital	19	5	-	P-P	Influenza
Feb	S	General	Comm. Hosp/Long-stay unit	16	0	18/01/2016	P-P & AB	Influenza
Feb	MW	General	Comm. Hosp/Long-stay unit	27	-	28/01/2016	P-P	Influenza
Feb	S	General	Nursing home	4	0	-	P-P & AB	Acute respiratory infection
Feb	S	General	Comm. Hosp/Long-stay unit	5	0	-	P-P & AB	Acute respiratory infection
Feb	E	General	Residential institution	12	0	29/01/2016	P-P & AB	Influenza
Feb	S	General	Hospital	4	-	-	Not Specified	Influenza
Feb	NW	General	Comm. Hosp/Long-stay unit	11	1	27/01/2016	P-P & AB	Influenza
Feb	S	General	Other	24	0	-	P-P & AB	Acute respiratory infection
Feb	NE	General	School	13	1	22/01/2016	AB	Influenza
Feb	SE	Family	Private house	2	2	19/01/2016	P-P	Influenza
Feb	E	General	Hospital	4	-	06/02/2016	NK	Influenza
Feb	S	General	Nursing home	6	0	21/01/2016	P-P	Scabies
Feb	E	General	Hospital	30	-	05/02/2016	P-P & AB	Influenza
Feb	S	General	Residential institution	6	0	07/02/2016	P-P & AB	Influenza
Feb	MW	General	Hospital	6	6	10/02/2016	P-P & AB	Influenza
Feb	SE	General	Residential institution	13	1	13/02/2016	P-P & AB	Influenza

Month	HSE area	Type of outbreak	Location	No. ill *	No. Hosp.	Date Onset	Suspect mode of transmission	Organism
Feb	NW	General	Comm. Hosp/Long-stay unit	12	-	-	P-P & AB	Influenza
Feb	NW	General	Comm. Hosp/Long-stay unit	20	0	09/02/2016	P-P	Influenza/RSA
Feb	E	Family	Private house	2	0	19/06/2015	NK	Pertussis
Feb	E	General	Residential institution	5	0	19/02/2016	AB	Influenza
Feb	S	General	Residential institution	5	1	16/02/2016	P-P & AB	Acute respiratory infection
Feb	NW	Family	Private house		-	13/02/2016	P-P	Influenza
Feb	SE	Family	Private house	2	-	12/02/2016	P-P	Mumps
Feb	E	General	Residential institution	3	1	24/02/2016	P-P & AB	Influenza
Mar	NW	General	Hospital	9	1	01/02/2016	Not Specified	Influenza
Mar	W	Family	Private house	2	2	12/02/2016	P-P	Influenza
Mar	S	General	School	10	0	07/02/2016	P-P & AB	Mumps
Mar	NE	General	Hospital	5	5	24/02/2016	P-P & AB	Influenza
Mar	SE	General	Residential institution	7	1	24/02/2016	P-P & AB	Influenza
Mar	S	General	Other	7	2	19/02/2016	P-P	Acute respiratory infection
Mar	E	General	Nursing home	13	0	05/03/2016	P-P	Acute respiratory infection
Mar	E	General	Residential institution		-	29/02/2016	P-P	Influenza
Mar	E	General	Residential institution	4	1	16/02/2016	P-P & AB	Influenza
Mar	E	General	Hospital	3	-	06/03/2016	P-P & AB	Influenza
Mar	NW	General	University/College	3	-	-	P-P	Gonorrhoea
Mar	W	General	Community outbreak		-	01/09/2014	P-P	Tuberculosis
Mar	E	General	Other	8	0	10/03/2016	P-P & AB	Acute respiratory infection
Mar	E	General	Residential institution	2	2	06/02/2016	P-P & AB	Influenza
Mar	NW	Family	Private house	3	2	06/03/2016	P-P & AB	Influenza
Mar	S	General	University/College		-	20/01/2016	P-P	Mumps
Mar	SE	General	Hospital		-	15/08/2015	Environmental / Fomite	CPE Klebsiella pneumoniae (colonisation)
Mar	E	General	Nursing home	11	-	-	P-P	Rhinovirus
Mar	S	General	Comm. Hosp/Long-stay unit	5	0	22/03/2016	P-P & AB	Influenza
Mar	NW	General	Comm. Hosp/Long-stay unit	4	-	26/03/2016	P-P & AB	Acute respiratory infection
Mar	NW	General	Comm. Hosp/Long-stay unit	2	-	-	Not Specified	Klebsiella Pneumoniae (CRE)

P-P denotes Person-to-Person transmission, WB denotes waterborne; AB denotes airborne; IDU denotes Injecting Drug Use; NK denotes unknown; CRE denotes Carbapenemresistant Enterobacteriaceae

* Total numbers ill does not include asymptomatic cases

Since July 2001, outbreaks have been reported to HPSC. Preliminary information is provided by a public health professional when the outbreak is first notified. Further information is provided by the lead investigator once more complete data are available. The data requested includes information on the source of reporting of the outbreak, the extent of the outbreak, mode of transmission, location, pathogen involved, laboratory investigation, morbidity and mortality data, suspect vehicle and factors contributing to the outbreak. The data provided are crucial in providing information on the reasons why the outbreak occurred, the factors that lead to the spread of disease and the lessons that can be learnt to prevent further such outbreaks.

Since the 1st January 2004, with the amendment to the Infectious Diseases Regulations (2003), there is a statutory requirement for medical practitioners and clinical directors of a diagnostic laboratory to notify to the medical officer of health ‘any unusual clusters or changing patterns of any illness, and individual cases thereof, that may be of public health concern’.

Tables 1 and 2 present a line listing of all general and family outbreaks of IID reported to HPSC in the first quarter of 2016. There were 53 general and 22 family IID outbreaks reported during this period, resulting in at least 1,165 people being ill.

Norovirus (n=30) was responsible for the most general outbreaks of IID (57%), followed by acute infectious gastroenteritis (n=21).

The most common cause of family outbreaks of IID was VTEC (n=11) [50%]. The other diseases responsible for family outbreaks were campylobacteriosis, cryptosporidiosis, giardiasis and salmonellosis. (Table 2).

Forty-three general IID outbreaks were transmitted person-to-person or person-to-person & airborne (81%). Forty-nine general IID outbreaks (92%) were reported to have occurred in healthcare settings, i.e. hospitals or residential institutions, during this period.

There were sixty-eight non-IID outbreaks reported during Q1 2016 (Table 3). The most common cause of non IID outbreaks was influenza (n=32) [47%]. Twenty-six influenza outbreaks (96%) were reported to have occurred in healthcare settings, i.e. hospitals or residential institutions, during this period.

Table 4 outlines the outbreak rate per HSE-area for outbreaks notified during Q1 2016.

Table 4. Number of Infectious Disease Outbreaks by HSE Area, Q1 2016

HSE Area	No. of outbreaks	Rate per 100,000 population
E	32	2.0
M	13	4.6
MW	4	1.0
NE	10	2.3
NW	18	7.0
SE	28	6.0
S	26	4.0
W	12	2.7
Total	143	3.1

NOTIFICATIONS OF INFECTIOUS INTESTINAL, ZONOTIC AND VECTORBORNE DISEASE

The number of notifications of infectious intestinal, zoonotic and vectorborne disease by HSE-Area for the first quarter of 2016 is shown in Table 5.

Table 5. Intestinal Infectious, Zoonotic and Vectorborne Disease Notifications Q1, 2016 by HSE Area

Infectious Intestinal Disease	E	M	MW	NE	NW	SE	S	W	Total
<i>Bacillus cereus</i> foodborne infection/intoxication	0	0	0	0	0	0	0	0	0
Botulism	0	0	0	0	0	0	0	0	0
<i>Campylobacter</i> infection	155	50	50	47	17	88	89	62	558
Cholera	0	0	0	0	0	0	0	0	0
<i>Clostridium perfringens</i> (type A) food-borne disease	0	0	0	0	0	0	0	0	0
Cryptosporidiosis	13	11	21	7	5	37	29	21	144
Giardiasis	15	5	1	0	0	18	10	6	55
Listeriosis	2	0	0	0	2	0	1	1	6
Noroviral infection	320	31	6	42	1	17	49	33	499
Paratyphoid	~	~	~	~	~	~	~	~	2
Rotavirus infection ^{a1}	187	8	12	21	18	21	50	16	333
Salmonellosis	19	1	3	5	2	8	9	4	51
Shigellosis	12	2	0	2	0	2	2	0	20
Staphylococcal food poisoning	0	0	0	0	0	0	0	0	0
Typhoid	~	~	~	~	~	~	~	~	2
Verotoxigenic <i>Escherichia coli</i> infection ^b	21	10	21	7	2	21	8	14	104
Yersiniosis	0	0	0	0	0	0	1	0	1
Zoonotic Disease									
Anthrax	0	0	0	0	0	0	0	0	0
Brucellosis	0	0	0	0	0	0	0	0	0
Echinococcosis	0	0	0	0	0	0	0	0	0
Leptospirosis	2	0	1	0	0	0	0	0	3
Plague	0	0	0	0	0	0	0	0	0
Q Fever	0	0	0	0	0	0	0	0	0
Rabies	0	0	0	0	0	0	0	0	0
Toxoplasmosis	3	0	1	0	1	1	1	4	11
Trichinosis	0	0	0	0	0	0	0	0	0
Vectorborne Disease									
Chikungunya disease	0	0	0	0	0	0	0	0	0
Dengue	4	0	0	0	0	0	0	0	4
Lyme disease (neuroborreliosis)	0	0	1	0	0	1	1	0	3
Malaria	3	1	1	0	1	1	0	0	7
Typhus	0	0	0	0	0	0	0	0	0
West Nile fever ^c	0	0	0	0	0	0	0	0	0

¹ Since March 2013, norovirus and rotavirus notifications from HSE-East are based on laboratory testing results rather than patient episodes. Notifications from HSE-E may also refer to area of laboratory testing rather than area of patient residence.

SALMONELLA ENTERICA

Human salmonellosis (*S. enterica*) is a notifiable disease. The National *Salmonella*, *Shigella* and *Listeria* Reference Laboratory (NSSLRL) in Ireland was established in 2000 in the Dept. of Medical Microbiology, University Hospital Galway. This laboratory accepts *S. enterica* isolates from all clinical and food laboratories in Ireland for serotyping, phage typing and antimicrobial sensitivity testing. Table 6 shows the number of salmonellosis notifications by HSE-Area and month for the first quarter of 2016. Comparison of trends with previous years is shown in Figure 1.

Table 6. Salmonellosis Notifications by HSE Area and Month, Q1 2016

Month	E	M	MW	NE	NW	SE	S	W	Total
Jan	5	1	0	0	2	3	2	2	15
Feb	5	0	1	2	0	4	4	0	16
Mar	9	0	2	3	0	1	3	2	20
Total	19	1	3	5	2	8	9	4	51

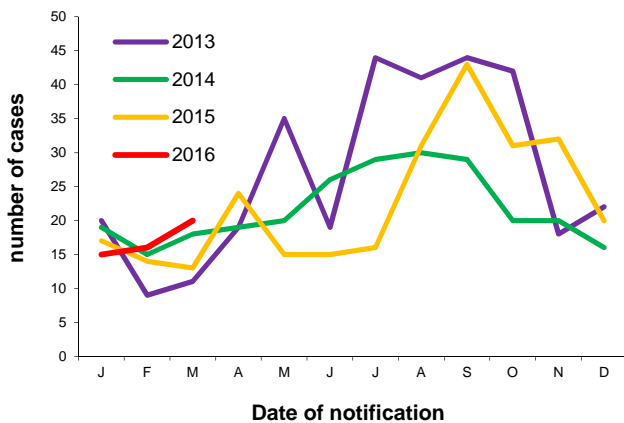


Figure 1. Seasonal Distribution of Human Salmonellosis Notifications, 2013 to end of Q1 2016

Table 7 shows the serotypes for the *Salmonella* isolates typed by the NSSLRL in the first quarter of 2016 by HSE area (n=59). The commonest human serotypes reported were *S. Typhimurium*[†] (n=21, 35%) and *S. Enteritidis* (n=9, 15%).

Table 8 shows the serotype distribution of confirmed *Salmonella* notifications by travel status this quarter among salmonellosis notifications on CIDR. Overall, 15% (n=8) were travel-associated, 43% (n=22) were indigenous and for 21 cases, the country of infection was unknown/not specified.

Table 7. Serotypes of human *S. enterica* isolates referred to NSSLRL in Q1, 2016

Serotype	E	M	MW	NE	NW	SE	S	W	Total
4,[5],12:i:-	3	0	2	1	0	2	3	1	12
Bareilly	0	0	0	0	0	1	0	0	1
Bovismorbificans	1	0	0	0	0	0	0	0	1
Corvallis	1	0	0	0	0	0	0	0	1
Enteritidis	4	0	0	1	1	2	0	1	9
Heidelberg	0	0	0	0	0	0	1	0	1
Infantis	1	0	0	0	0	2	0	0	3
Java	1	0	0	0	0	1	1	0	3
Kentucky	1	0	0	0	0	0	0	1	2
Kisangani	1	0	0	0	0	0	0	0	1
Mbandaka	1	0	0	0	0	1	0	0	2
Muenster	0	0	0	0	0	0	0	1	1
Newport	2	0	0	0	1	0	0	0	3
Ohio	1	0	0	0	0	0	0	0	1
Paratyphi A	1	0	0	0	0	0	1	0	2
Saintpaul	1	0	0	0	0	0	0	0	1
Typhi	2	0	0	0	0	0	0	1	3
Typhimurium	1	1	0	2	0	1	4	0	9
Unnamed	2	0	0	1	0	0	0	0	3
Grand Total	24	1	2	5	2	10	10	5	59

Data Source: NSSLRL

Table 8. Confirmed *Salmonella* notifications by Serotype and Travel Status, Q1 2016 [n(%)]

Serotype	Indigenous	Travel-associated	Unk/not specified	Total
<i>S. Enteritidis</i>	2 (9%)	2 (25%)	4 (19%)	8 (16%)
<i>S. Typhimurium</i> *	12 (55%)	0 (0%)	7 (33%)	19 (37%)
Other	5 (23%)	6 (75%)	9 (43%)	20 (39%)
<i>Salmonella</i> spp	3 (13%)	0 (0%)	1 (5%)	4 (8%)
Total	22 (100%)	8 (100%)	21 (100%)	51 (100%)

Note: Data source CIDR. Travel status is inferred from *Country of Infection* variable on CIDR. Note excludes probable notifications

* Includes monophasic *S. Typhimurium* 4,5,12:i:-

Outbreaks of Salmonellosis

There were two family outbreaks of salmonellosis notified in Q1 2016 (Tables 1 & 2).

S. Typhi and *S. Paratyphi*

There were two cases of typhoid reported to CIDR in Q1 2016 – both associated with travel to the Indian sub-continent. There were two cases of paratyphoid notified this quarter, associated with travel to India and Indonesia.

Outbreaks of *S. Typhi* and *S. Paratyphi*

There were no outbreaks of typhoid or paratyphoid notified in Q1 2016.

[†]includes 12 cases of monophasic *S. Typhimurium* 4,5,12:i:-

VEROTOXIGENIC *E. COLI* (VTEC)

Verotoxigenic *E. coli* (VTEC) became a notifiable disease on January 1st 2012. Previously, VTEC were notified under the category of Enterohaemorrhagic *E. coli* between 2004 and 2011.

One hundred and four cases of VTEC were notified this quarter, the regional distribution of which is shown in Table 9. This compares with 69 VTEC cases notified in Q1 2015 and 78 in Q1 2014 (figure 2).

Table 9 shows the number of VTEC cases reported by case classification and HSE-area and Table 10 shows the number of VTEC cases by serogroup and month, Q1 2016.

Table 9. Number VTEC notified by case classification and HSE-area, Q1 2016

Case classification	E	M	MW	NE	NW	SE	S	W	Total
Confirmed	21	9	16	7	2	21	8	14	98
Probable		1	5						6
Possible	0	0	0	0	0	0	0	0	0
Total	21	10	21	7	2	21	8	14	104

Table 10. VTEC notified by serogroup and month, Q1 2016

Month	O157	O26	Other	Total
Jan	6	8	15	29
Feb	3	3	13	19
Mar	6	19	31	56
Total	15	30	59	104

Three VTEC cases notified this quarter were reported as having developed HUS – all were ungroupable.

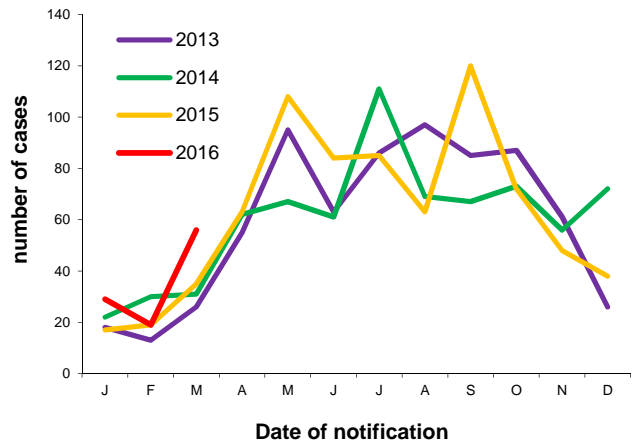


Figure 2. Seasonal distribution of VTEC cases notified 2013 to end of Q1 2016

The HSE-DML Public Health Laboratory at Cherry Orchard Hospital, Dublin provides a national *E. coli* O157 and non-O157 diagnostic service for clinical samples, including *E. coli* serotyping, verotoxin detection and VTEC molecular typing. Table 11 shows the *vt* types of VTEC cases notified in Q1 2016.

Table 11. Verotoxin typing profiles of *E. coli* referred to the HSE DML Public Health Laboratory, Cherry Orchard Hospital in Q1 2016

Serogroup	vt1	vt2	vt1+vt2	Not spec.	Total
O157	0	9	2	4	15
O26	9	1	17	3	30
Other	21	18	12	8	59
Total	30	28	31	15	104

Data Source: PHL Cherry Orchard

Outbreaks of VTEC infection

During this quarter, eleven family outbreaks of VTEC infection were reported (Tables 1 & 2).

CAMPYLOBACTER

Human campylobacteriosis became a notifiable disease on January 1st 2004. Prior to this, human campylobacter infection was notified under the category of 'Food Poisoning (bacterial other than Salmonella)'. The notifications for the first quarter of 2016 are shown in Table 12. There were 558 cases of campylobacteriosis notified in Q1 2016 compared to 421 in the same period in 2015 and 465 in Q1 2014 (Figure 3).

Table 12. *Campylobacter* notifications by HSE-Area and month, Q1 2016

Month	E	M	MW	NE	NW	SE	S	W	Total
Jan	56	20	21	19	6	29	40	21	212
Feb	46	8	17	16	6	30	32	10	165
Mar	53	22	12	12	5	29	17	31	181
Total	155	50	50	47	17	88	89	62	558

Outbreaks of *Campylobacter* infection

There was one family outbreak of campylobacteriosis reported in Q1 2016 (Tables 1 and 2).

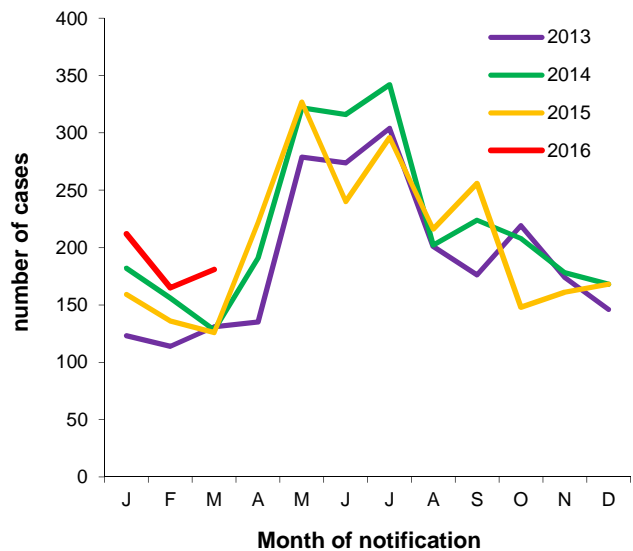


Figure 3. Seasonal distribution of *Campylobacter* notifications 2013 to end of Q1 2016

CRYPTOSPORIDIUM

Human cryptosporidiosis became a notifiable disease on January 1st 2004. Prior to this, cryptosporidiosis was notifiable in Ireland only in young children under the category 'Gastroenteritis in Children Under 2'. In Q1 2016, 144 cases of cryptosporidiosis were notified (Table 13), compared to 58 in the same period in 2015 and 93 in Q1 2014 (Figure 4).

Table 13. *Cryptosporidiosis* notifications by HSE-Area and month, Q1 2016

Month	E	M	MW	NE	NW	SE	S	W	Total
Jan	4		2	1	1	3	3	5	19
Feb	5	2	3	1	2	7	5	4	29
Mar	4	9	16	5	2	27	21	12	96
Total	13	11	21	7	5	37	29	21	144

Outbreaks of cryptosporidiosis

There were six family outbreaks of cryptosporidiosis reported in quarter 1 2016. (Tables 1 and 2).

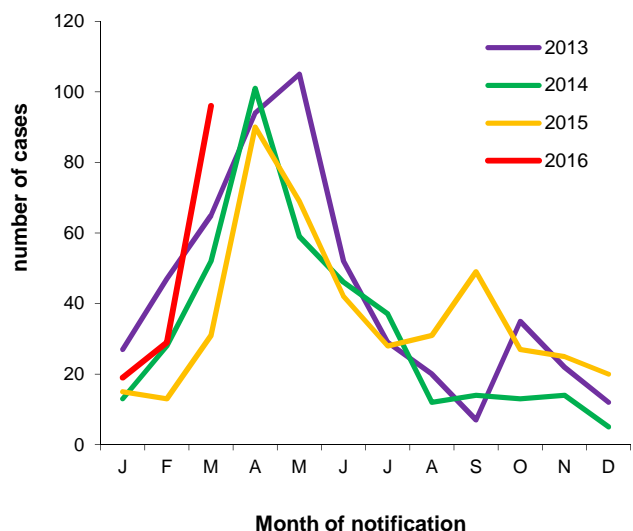


Figure 4. Seasonal distribution of *Cryptosporidium* notifications 2013 to end of Q1 2016

NOROVIRUS

Human noroviral infection became a notifiable disease on January 1st 2004. Since March 2013, norovirus notifications from HSE-East are based on laboratory testing results rather than patient episodes. Notifications from HSE-E may also refer to area of laboratory testing rather than area of patient residence.

There were 499 cases notified in the first quarter of 2016 (Table 14). These data are certainly an under-ascertainment of the true burden of disease due to this pathogen.

Table 14. Norovirus notifications by HSE-Area and month, Q1 2016

Month	E	M	MW	NE	NW	SE	S	W	Total
Jan	71	20	1	9	0	2	0	5	108
Feb	49	6	3	6	1	3	4	25	97
Mar	200	5	2	27	0	12	45	3	294
Total	320	31	6	42	1	17	49	33	499

Norovirus outbreaks

Norovirus or suspect viral aetiology is the commonest cause of outbreaks of acute

gastroenteritis in Ireland. In the first quarter of 2016, there were thirty outbreaks confirmed as being caused by this virus, involving at least 533 people becoming ill, as outlined in tables 1 & 2. The seasonal trend is outlined in figure 5.

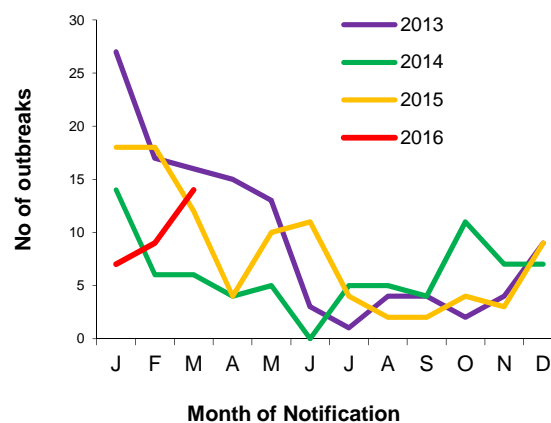


Figure 5. Seasonal distribution of confirmed norovirus outbreaks, 2013 to end of Q1 2016

SHIGELLA

On January 1st 2004, infection with *Shigella* spp. became notifiable as 'Shigellosis'. Prior to this, it was notifiable as 'Bacillary Dysentery'.

During Q1 2016, twenty cases of shigellosis were notified (Table 5). This compares with ten cases notified in Q1 2015 and seven in Q1 2014.

Four cases were travel related and the county of infection was reported as Ireland for a further five cases. The country of infection was reported as unknown/not specified for the remaining eleven cases.

Table 15: Species and serotype distribution of Q1 2016 human *Shigella* isolates referred to the NSSLRL.

Serotype	Number of isolates
<i>Shigella flexneri</i> 1a	1
<i>Shigella flexneri</i> 2a	5
<i>Shigella flexneri</i> 4c	1
<i>Shigella sonnei</i>	9
Total	16

Data Source: NSSLRL

Outbreaks of shigellosis

There were no outbreaks of shigellosis notified in Q1 2016 (Table 2).

GIARDIA

Human giardiasis became a notifiable disease on January 1st 2004. Prior to this, giardiasis was notifiable in Ireland only in young children under the category ‘gastroenteritis in children under 2 years’.

During Quarter 1 2016, fifty-five cases of giardiasis were notified (Table 5); this compares with 24 cases notified in Q1 2015 and 17 in Q1 2014.

Eight cases were reported to have acquired their illness abroad. Country of infection was reported as Ireland for twenty cases and ‘not specified’ or ‘unknown’ for the remaining twenty-seven cases.

Outbreaks of giardiasis

There were two family outbreaks of giardiasis notified in Q1 2016 (Table 2).

LISTERIA

Human listeriosis became a notifiable disease on January 1st 2004. Prior to this, listeriosis was notified under the category of ‘Food Poisoning (bacterial other than Salmonella)’ or ‘Bacterial Meningitis’ as appropriate.

There were six adult cases of listeriosis notified in Q1 2016, compared to five cases in quarter 1 2015 and three in quarter 1 2014.

Four isolates were referred for typing to NSSLRL this quarter (Table 16).

Table 16: Serotypes of Q1 2016 human *Listeria* isolates referred to the NSSLRL

Serotype	Number of isolates
4b	2
1/2a	1
1/2b	1

Data Source: NSSLRL

ROTAVIRUS INFECTION

Prior to 2004, rotavirus cases were notified under the “Gastroenteritis in children under two years” disease category. From 2004 to 2010, rotavirus was notifiable in all age groups under the “Acute Infectious Gastroenteritis” (AIG) disease category, until it became notifiable as a disease in its own right under the Infectious Diseases (Amendment) Regulations 2011 (S.I. No. 452 of 2011). Since March 2013, rotavirus notifications from HSE-East are based on laboratory test results rather than patient episodes. Notifications from HSE-E may also refer to area of laboratory testing rather than area of patient residence.

Rotavirus notifications for the first quarter of 2016 are shown in Table 17 and Figure 6.

Table 17. Rotavirus infection by HSE-Area and month, Q1 2016

Month	E	M	MW	NE	NW	SE	S	W	Total
Jan	44	1	3	2	1	6	5	6	68
Feb	40	5	1	7	8	4	7	4	76
Mar	103	2	8	12	9	11	38	6	189
Total	187	8	12	21	18	21	50	16	333

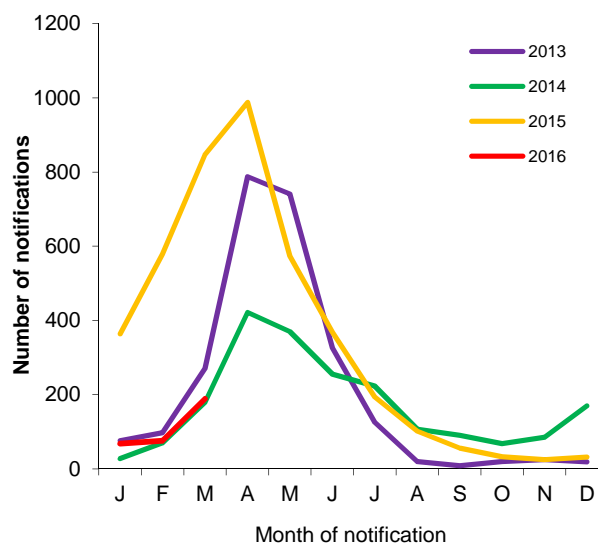


Figure 6. Seasonal distribution of rotavirus notifications, 2013 to end of Q1 2016

Outbreaks of rotavirus

There were no outbreaks of rotavirus notified this quarter (Table 2).

FOODBORNE INTOXICATIONS

Bacillus cereus foodborne infection/intoxication, botulism, *Clostridium perfringens* (type A) foodborne disease and staphylococcal food poisoning became notifiable diseases on January 1st 2004. Prior to this, these diseases were notified under the

category of 'Food Poisoning (bacterial other than Salmonella)'.
There were no cases of foodborne infection/intoxication notified this quarter.

There were no cases of foodborne infection/intoxication notified this quarter.

NON-IID ZONOTIC DISEASES

Non-IID zoonoses now notifiable include: anthrax, brucellosis, echinococcosis, leptospirosis, plague, Q fever, toxoplasmosis, trichinosis and rabies. The Q1 2016 notifications of these zoonotic diseases are reported by HSE-Area in Table 5.

Eleven cases of toxoplasmosis were notified in this quarter. This compares with seven cases notified in

the same period in 2015 and seven cases in Q1 2014.

There were three cases of leptospirosis notified in Q1 2016; this compares with none in Q1 2015 and two in Q1 2014. The possible source of infection was unknown/not specified for all three cases.

There were no cases of brucellosis, echinococcosis, trichinosis or Q Fever notified this quarter.

MALARIA

Malaria has been a notifiable disease for many years. The Q1 2016 notifications are reported in Table 5 by HSE-Area.

Seven cases of malaria were notified in Q1 2016. This compares with seventeen cases reported in Q1 2015 and nine in Q1 2014.

All seven cases this quarter were reported as *P. falciparum*.

Four cases were exposed in Sub-Saharan Africa and the country of infection is unknown/not specified for the remaining three cases.

The reason for travel for one case was reported as 'visiting family in country of origin', one case was reported in an Irish citizen living abroad and two cases cited business travel. The reason for travel was not specified/unknown for the remaining three cases.

OTHER NOTIFIABLE VECTORBORNE DISEASES

Under Infectious Diseases (Amendment) Regulations 2011 (S.I. No. 452 of 2011) (Sept 2011), Chikungunya disease, Dengue, Lyme disease (neuroborreliosis) and West Nile fever were made notifiable. The Q1 2016 notifications are reported in Table 5 by HSE-Area.

There were three cases of Lyme disease (neuroborreliosis) reported in Q1 2016. There were four cases of Dengue fever reported. Country of infection was unknown for all four cases.

There were no notifications of Chikungunya disease or West Nile fever this quarter.

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