

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 2–2018

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This is the second quarterly report for 2018 produced by the Gastroenteric Unit of the Health Protection Surveillance Centre.

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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 Q2, 2018

Month	HSE area	Location	No. ill *	No. Hosp.	Date Onset	Suspect mode of transmission	Disease
Apr	E	Nursing home	6	0	30/03/2018	P-P & AB	AIG
Apr	E	Nursing home	17	0	01/04/2018	P-P	Noroviral infection
Apr	SE	Nursing home	30		30/03/2018	P-P & AB	Noroviral infection
Apr	SE	Residential institution	10	1	28/03/2018	P-P & AB	AIG
Apr	NE	Nursing home	62		29/03/2018	P-P	Noroviral infection
Apr	SE	Nursing home	3		05/04/2018	Unknown	AIG
Apr	E	Hospital	12		29/03/2018	P-P & AB	Noroviral infection
Apr	SHB	Residential institution	10		02/04/2018	P-P	Noroviral infection
Apr	W	Nursing home	6	0	05/04/2018	P-P	AIG
Apr	W	Nursing home	14	0		P-P	Noroviral infection
Apr	NW	Residential institution	11	0	08/04/2018	P-P	Noroviral infection
Apr	SHB	Hospital	3		08/04/2018	P-P	Noroviral infection
Apr	W	Hospital	13	13		P-P	Noroviral infection
Apr	SHB	Nursing home				P-P & AB	Noroviral infection
Apr	SHB	Hospital				P-P	Noroviral infection
Apr	MW	Nursing home	27	0	05/04/2018	P-P	AIG
Apr	SHB	Other	3		10/04/2018	P-P	Cryptosporidiosis
Apr	MW	Hospital			11/04/2018	P-P & AB	Noroviral infection
Apr	SE	Residential institution	4		16/04/2018	P-P	AIG
Apr	E	Nursing home	5		21/04/2018	P-P & AB	Noroviral infection
Apr	E	Nursing home	13		18/04/2018	P-P & AB	Noroviral infection
Apr	NE	Nursing home	14	1	19/04/2018	P-P	Noroviral infection
Apr	E	Nursing home	6		26/03/2018	P-P & AB	Noroviral infection
Apr	NE	Hospital	4	4	06/04/2018	P-P	Sapovirus
Apr	MW	Nursing home	13	0	20/04/2018	P-P & AB	AIG
Apr	MW	Nursing home	7		26/04/2018	P-P	AIG
May	E	Nursing home	4	1	29/04/2018	P-P & AB	Noroviral infection
May	M	Hospital	4			P-P & AB	Noroviral infection
May	SHB	Comm. Hosp/Long-stay unit			01/05/2018	P-P	AIG
May	SHB	Nursing home	15	0		P-P & AB	Noroviral infection
May	MW	Nursing home	10	0	07/05/2018	P-P	Noroviral infection
May	SHB	Comm. Hosp/Long-stay unit			29/04/2018	P-P	AIG
May	E	Childcare facility	5		09/05/2018	P-P & AB	AIG
May	E	Nursing home	10		09/05/2018	P-P & AB	Noroviral infection
May	SHB	Comm. Hosp/Long-stay unit	4		21/04/2018	P-P & FB	Campylobacter infection
May	NE	Nursing home	25	0	08/05/2018	P-P	Noroviral infection
May	E	Comm. Hosp/Long-stay unit	8	0	16/05/2018	P-P & AB	Noroviral infection
May	NE	Childcare facility	4		08/05/2018	P-P	VTEC
May	E	Restaurant / Cafe	19	0		Unknown	Noroviral infection
May	SHB	Residential institution	4		13/05/2018	Not Specified	AIG
May	NE	Residential institution	8	0	27/05/2018	P-P	AIG
May	E	Childcare facility	10	0	23/05/2018	Unknown	AIG

Month	HSE area	Location	No. ill *	No. Hosp.	Date Onset	Suspect mode of transmission	Disease
Jun	MW	Hospital			25/03/2018	Environmental / Fomite	Clostridium difficile infection
Jun	MW	Hospital			01/04/2018	Environmental / Fomite	Noroviral infection
Jun	E	Childcare facility	4		21/05/2018	P-P & AB	AIG
Jun	SE	Hospital	5		11/05/2018	Environmental / Fomite	Clostridium difficile infection
Jun	E	Hospital	2	2	24/05/2018	Unknown	Giardiasis
Jun	W	Residential institution	4	1		P-P	Noroviral infection
Jun	SHB	Childcare facility	5	2	12/06/2018	Unknown	AIG
Jun	NW	Residential institution	3	0	15/06/2018	P-P	AIG
Jun	M	Childcare facility	5	0	15/06/2018	Unknown	VTEC
Jun	SE	Nursing home	26	1	21/06/2018	P-P & AB	Noroviral infection
Jun	W	Hospital	14	14	16/06/2018	P-P	Noroviral infection
Jun	E	Travel related	3	2	17/06/2018	P-P & FB	Shigellosis
Jun	W	Hospital	5	5		P-P	Clostridium difficile 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 Q2, 2018

Month	HSE area	Location	No. ill *	No. Hosp.	Date Onset	Suspect mode of transmission	Disease
Apr	SE	Private house	2	1	14/03/2018	Unknown	Cryptosporidiosis
Apr	SE	Private house	2	1	13/03/2018	P-P & Animal	Cryptosporidiosis
Apr	W	Private house	3	0	18/03/2018	Unknown	VTEC
Apr	M	Not Specified				Unknown	VTEC
Apr	M	Not Specified			08/04/2018	Unknown	VTEC
Apr	MW	Private house	4	1	04/03/2018	P-P	VTEC
Apr	NW	Private house	5	1	27/03/2018	Unknown	VTEC
Apr	NW	Private house	3	2	09/04/2018	P-P	VTEC
Apr	SHB	Private house	2	1	15/03/2018	P-P	Shigellosis
Apr	SHB	Private house	2	1	15/03/2018	P-P	Blastocystis hominis
Apr	NE	Private house	3		28/03/2018	P-P & Animal	VTEC
Apr	E	Private house	3		08/04/2018	Animal contact	VTEC
Apr	M	Private house			25/04/2018	Unknown	VTEC
May	E	Private house			10/04/2018	Animal contact	Cryptosporidiosis
May	M	Private house	2	0	29/03/2018	Unknown	Giardiasis
May	MW	Private house			21/04/2018	P-P	VTEC
May	NW	Private house	2	0	20/04/2018	Not Specified	VTEC
May	W	Private house			17/04/2018	P-P & Animal	Cryptosporidiosis
May	NW	Private house	2	1	01/02/2018	Unknown	Fasciola hepatica (Liver Fluke)
May	SE	Private house	2	2	10/04/2018	Unknown	Cryptosporidiosis
May	SHB	Extended family	4	4	22/04/2018	P-P	Noroviral infection
May	MW	Private house	1	0	12/04/2018	P-P	VTEC
May	E	Private house	3			Unknown	Giardiasis
May	SE	Private house	1	0	22/04/2018	Unknown	VTEC
May	SE	Private house	1	0	28/04/2018	Unknown	VTEC

May	M	Private house	1	0	03/05/2018	Unknown	VTEC
May	M	Private house	1	0	06/05/2018	Unknown	VTEC
May	M	Private house	1	1	12/05/2018	Unknown	VTEC
May	NE	Private house	2		22/04/2018	Animal contact	Cryptosporidiosis
May	MW	Private house	3	1	13/03/2018	P-P	VTEC
May	NE	Private house	2		16/04/2018	WB	VTEC
May	W	Private house			01/05/2018	P-P	VTEC
May	W	Private house	1	0	01/05/2018	Animal contact	VTEC
May	NW	Extended family	3	0	07/05/2018	Not Specified	VTEC
May	SHB	Private house	3		01/04/2018	P-P	Giardiasis
May	M	Private house	1	0	26/05/2018	WB	VTEC
May	SE	Private house	4	0	14/05/2018	P-P	Cryptosporidiosis
Jun	M	Private house	2	0	21/05/2018	Unknown	VTEC
Jun	E	Private house	2		30/04/2018	P-P	VTEC
Jun	SHB	Not Specified	2		29/04/2018	Not Specified	VTEC
Jun	NE	Private house	2		16/05/2018	P-P & Animal	VTEC
Jun	W	Travel related	2	0	14/05/2018	Travel Related	Giardiasis
Jun	W	Travel related	2	1	30/05/2018	FB	Salmonellosis
Jun	NE	Private house	3			Unknown	Campylobacter infection
Jun	M	Private house	1		02/06/2018	Not Specified	VTEC
Jun	SE	Extended family	3	1	31/05/2018	P-P	VTEC
Jun	NW	Private house	1	1	03/06/2018	Unknown	VTEC
Jun	M	Private house	1		09/06/2018	Unknown	VTEC
Jun	M	Private house	1			Unknown	VTEC
Jun	MW	Private house			25/05/2018	P-P	Cryptosporidiosis
Jun	M	Private house	1		12/06/2018	Unknown	VTEC
Jun	M	Not Specified			14/06/2018	Not Specified	VTEC
Jun	SHB	Private house	2		12/06/2018	P-P & WB	Cryptosporidiosis
Jun	W	Private house	1	0	29/05/2018	P-P	VTEC
Jun	W	Private house	1	0	01/06/2018	Unknown	VTEC
Jun	W	Private house	2	0	18/05/2018	Not Specified	VTEC
Jun	NE	Private house	1		07/06/2018	P-P & WB	VTEC
Jun	SHB	Private house	1	0	04/06/2018	P-P & Animal	VTEC
Jun	NE	Private house	2		02/02/2018	P-P	VTEC
Jun	SE	Private house	1	0	22/05/2018	Animal contact	VTEC
Jun	M	Private house	1	0	23/06/2018	Unknown	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-ILD outbreaks in Q2, 2018

Month	HSE area	Type of outbreak	Location	No. ill *	No. Hosp.	Date Onset	Suspect mode of transmission	Organism
Apr	W	General	Nursing home	9	0	26/03/2018	P-P	Influenza
Apr	SE	General	Nursing home	39	6	01/04/2018	P-P & AB	Influenza
Apr	NE	General	Nursing home	8	5	29/03/2018	P-P	RSV
Apr	W	General	Hospital	3	3		P-P	Influenza
Apr	E	General	Nursing home	3			P-P & AB	Influenza
Apr	E	General	Hospital	4		08/04/2018	P-P & AB	Influenza
Apr	SHB	General	Hospital	3		07/04/2018	P-P	Influenza

Month	HSE area	Type of outbreak	Location	No. ill *	No. Hosp.	Date Onset	Suspect mode of transmission	Organism
Apr	W	General	Nursing home	24	2	04/04/2018	P-P & AB	Influenza
Apr	E	General	Hospital	4 colonised		22/03/2018	Not Specified	ESBL E. coli and Klebsiella
Apr	NW	Family	Private house	2	0	04/03/2018	P-P	Mumps
Apr	W	Family	Private house	2	0	21/03/2018	P-P	Mumps
Apr	M	General	Comm. Hosp/Long-stay unit	7	2		P-P & AB	Influenza
Apr	SE	Family	Private house	6	2	01/04/2018	P-P & AB	Influenza
Apr	W	General	Nursing home	25	3		P-P & AB	Influenza
Apr	SHB	General	Comm. Hosp/Long-stay unit				AB	Influenza
Apr	SHB	General	Residential institution	24	1	07/04/2018	AB	Influenza
Apr	SHB	General	Comm. Hosp/Long-stay unit	8	3	15/04/2018	AB	Influenza
Apr	SE	General	Hospital	3		29/03/2018	P-P	CPE
Apr	E	General	Hospital	13 colonised		01/02/2018	P-P	VRE
Apr	E	General	Hospital	16	16	26/03/2018	P-P & AB	Influenza
Apr	NW	General	Community outbreak	7		12/04/2018	P-P	Mumps
Apr	W	General	Residential institution	20	1	24/04/2018	P-P	Acute respiratory infection
May	E	General	Childcare facility	20	0	31/03/2018	P-P & AB	Varicella Zoster
May	NW	General	Hospital	12 colonised		27/04/2018	P-P	CPE
May	SHB	General	Comm. Hosp/Long-stay unit	18			P-P	Rhinovirus
May	SE	General	Community outbreak	11		18/03/2011	AB	Tuberculosis
Jun	E	General	Hospital	7		01/01/2018	P-P	MRSA
Jun	NE	General	Hospital	5 colonised			P-P	VRE
Jun	SHB	Family	Private house	3	1	09/10/2017	AB	Tuberculosis
Jun	SHB	General	Residential institution	2	1	10/10/2016	AB	Tuberculosis
Jun	SHB	Family	Private house	4	1	01/02/2018	AB	Tuberculosis
Jun	E	General	Hospital	2	6	11/06/2018	P-P	MRSA
Jun	W	General	Hospital	4	4		Unknown	Staphylococcus epidermidis
Jun	SE	General	Other	5		24/04/2016	AB	Tuberculosis
Jun	SHB	General	Residential institution	5	1	10/06/2018	P-P & AB	Acute respiratory infection
Jun	SE	General	Hospital	2 colonised			P-P	CPE
Jun	E	General	Hospital	2		20/06/2018	P-P	Pseudomonas
Jun	SE	General	Hospital	6 colonised			P-P	VRE
Jun	SHB	General	Hospital	6 colonised			Not Specified	CPE

P-P denotes Person-to-Person transmission, WB denotes waterborne; AB denotes airborne; NK denotes unknown; CPE denotes Carbapenemresistant Enterobacteriaceae; RSV denotes Respiratory syncytial virus.

* 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 second quarter of 2018. There were 55 general and 61 family IID outbreaks reported during this period, resulting in at least 603 people being ill.

Norovirus (n=29) and Acute infectious gastroenteritis (n= 17) were responsible for the most general outbreaks of IID (40%).

Forty-three general IID outbreaks were transmitted person-to-person/person-to-person & airborne (78%). Forty-six general IID outbreaks (84%) were reported to have occurred in healthcare settings, i.e. hospitals or residential institutions, during this period.

The most common cause of family outbreaks of IID was VTEC (n=42) [69%]. Other pathogens responsible for family outbreaks in Q2 2018 were AIG, blastocystis hominis, campylobacteriosis, cryptosporidiosis, fasciola hepatica (liver fluke), giardiasis, norovirus, salmonellosis and shigellosis (Table 2).

There were thirty-nine non-IID outbreaks reported during Q2 2018 (Table 3). The most common cause of non IID outbreaks was during this period was influenza (n=14) [36%]. The majority (97%) of influenza outbreaks reported in Q2 2018 occurred in healthcare settings.

Table 4 outlines the outbreak rate per HSE-area for outbreaks notified during Q2 2018.

Table 4. Number of infectious disease outbreaks by HSE Area, Q2 2018

HSE Area	No. of outbreaks	Rate per 100,000 population
E	28	1.6
M	18	6.1
MW	12	3.1
NE	15	3.2
NW	11	4.3
SE	21	4.1
S	28	4.1
W	22	5.0
Total	155	3.3

NOTIFICATIONS OF INFECTIOUS INTESTINAL, ZONOTIC AND VECTORBORNE DISEASE

The number of notifications of infectious intestinal, zoonotic and vectorborne disease by HSE-Area for the second quarter of 2018 is shown in Table 5.

Table 5. Infectious intestinal, zoonotic and vectorborne disease notifications Q2, 2018 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 ¹	336	67	68	88	38	151	174	99	1021
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	22	42	41	16	14	45	116	50	346
Giardiasis	27	3	1	0	0	10	10	9	60
Listeriosis	5	0	0	0	0	1	1	0	7
Noroviral infection ²	149	7	63	30	1	8	49	20	327
Paratyphoid	0	0	0	0	0	0	0	0	0
Rotavirus infection ³	97	25	18	27	10	42	25	19	263
Salmonellosis	26	3	6	8	4	12	11	8	78
Shigellosis	16	0	1	1	0	0	3	1	22
Staphylococcal food poisoning	0	0	0	0	0	0	0	0	0
Typhoid	~	~	~	~	~	~	~	~	1
Verotoxigenic <i>Escherichia coli</i> infection	56	20	36	55	19	60	45	35	326
Yersiniosis	0	1	1	0	0	0	2	0	4
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	1	0	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	6	0	1	0	1	1	4	1	14
Trichinosis	0	0	0	0	0	0	0	0	0
Vectorborne Disease									
Chikungunya disease	0	0	0	0	0	0	0	0	0
Dengue	0	0	1	0	0	0	4	0	5
Lyme disease (neuroborreliosis)	1	0	0	0	0	0	1	0	2
Malaria	7	0	0	2	0	1	0	1	11
Typhus	0	0	0	0	0	0	0	0	0
West Nile fever	0	0	0	0	0	0	0	0	0
Zika Virus Infection	0	0	0	0	0	0	0	0	0

¹ From August 2017, campylobacter notifications from HSE-East re 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.

² Between March 2013 and July 2017, norovirus notifications from HSE-East were 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.

³ Between March 2013 and July 2017, rotavirus notifications from HSE-East were 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 College 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 second quarter of 2018. Comparison of trends with previous years is shown in Figure 1.

Table 6. Salmonellosis notifications by HSE-Area and month, Q2 2018

Month	E	M	MW	NE	NW	SE	S	W	Total
Apr	8	2	0	4	2	4	1	1	22
May	12	1	3	2	1	5	6	3	33
Jun	6	0	3	2	1	3	4	4	23
Total	26	3	6	8	4	12	11	8	78

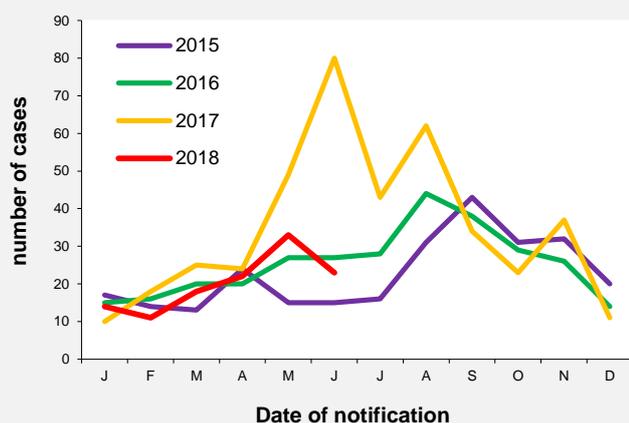


Figure 1. Seasonal distribution of human salmonellosis notifications, 2015 to end Q2 2018

Table 7 shows the serotypes for the *Salmonella* isolates typed by the NSSLRL in the second quarter of 2018 by HSE area (n=85). The commonest human serotypes reported this quarter were *S. Enteritidis* (n=25, 29%) and *S. Typhimurium* (n=24).

Table 8 shows the serotype distribution of confirmed *Salmonella* cases by travel status this quarter among salmonellosis notifications on CIDR. 32% (n=25) were travel-associated, 45% (n=35) were indigenous and for 17 cases, the country of infection was unknown/not specified.

Outbreaks of salmonellosis

There was one family outbreak of salmonellosis notified in Q2 2018. (Tables 1 & 2).

* Includes 13 cases of monophasic *S. Typhimurium* 4,5,12:i:-

Table 7. Serotypes of human *Salmonella* isolates referred to NSSLRL Q2 2018

Serotype	E	M	MW	NE	NW	SE	S	W	Total
4,[5],12:i:-	8	0	0	2	1	1	0	1	13
Agona	2	0	0	0	0	0	1	1	4
Albany	0	0	0	0	0	0	1	0	1
Bareilly	1	0	0	0	0	0	0	0	1
Bovismorbificans	0	0	0	0	0	0	0	1	1
Braenderup	0	0	0	0	0	1	0	0	1
Brandenburg	1	0	0	0	0	0	0	0	1
Bredeney	0	0	0	1	0	0	0	0	1
Choleraesuis	1	0	0	0	0	0	0	0	1
Colindale	0	0	0	1	0	0	0	0	1
Corvallis	0	0	0	0	0	1	0	0	1
Derby	0	0	0	0	0	1	0	0	1
Dublin	0	0	0	1	0	0	0	0	1
Durham	0	0	1	0	0	0	0	0	1
Enteritidis	6	2	2	0	2	3	7	3	25
Hvittingfoss	0	0	0	0	0	1	0	0	1
Illa									
13,23:z4,z23:-	1	0	0	0	0	0	0	0	1
Infantis	0	0	0	0	0	0	1	0	1
Java	0	0	0	1	0	0	0	0	1
Kentucky	0	0	0	0	0	1	0	0	1
Newport	2	0	0	0	0	0	0	0	2
Panama	1	0	0	0	0	0	0	0	1
Stanley	0	1	0	0	0	0	0	0	1
Typhi	1	0	0	0	0	0	0	0	1
Typhimurium	4	1	2	0	0	3	1	2	13
Unnamed	1	0	0	0	0	0	0	0	1
Virchow	1	0	0	1	0	0	0	0	2
Total	30	4	5	7	3	12	11	8	80

Data Source: NSSLRL

Table 8. Confirmed *Salmonella* notifications by serotype and travel status, Q2 2018 [n(%)]

Serotype	Indigenous	Travel-associated	Unk/not specified	Total
S. Enteritidis	7 (20%)	10 (40%)	7 (41%)	24 (31%)
S. Typhimurium*	15 (43%)	4 (16%)	0 (0%)	19 (25%)
Other	11 (31%)	9 (36%)	8 (47%)	28 (36%)
<i>Salmonella</i> spp	2 (6%)	2 (8%)	2 (12%)	6 (8%)
Total	35 (100%)	25 (100%)	17 (100%)	77 (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:-

S. Typhi and *S. Paratyphi*

There was one case of typhoid reported in Q2 2018, however country of infection is not specified.

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

There were no outbreaks of typhoid or paratyphoid notified in Q2 2018.

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.

Three hundred and twenty-six cases of VTEC were notified this quarter, the regional distribution of which is shown in Table 9. This compares with 232 VTEC cases notified in Q2 2017 and 261 in Q2 2016 (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, Q2 2018.

Table 9. Number VTEC notified by case classification and HSE-area, Q2 2018

Case classification	E	M	MW	NE	NW	SE	S	W	Total
Confirmed	55	14	31	43	14	51	45	32	285
Probable	1	6	5	12	5	9	0	3	41
Possible	0	0	0	0	0	0	0	0	0
Total	56	20	36	55	19	60	45	35	326

Table 10. VTEC notified by serogroup and month, Q2 2018

Month	O157	O26	Other	Total
Apr	5	31	30	66
May	20	63	52	135
Jun	39	43	43	125
Total	64	137	125	326

Five VTEC cases notified this quarter were reported as having developed HUS – one O157, two O26 and two O103.

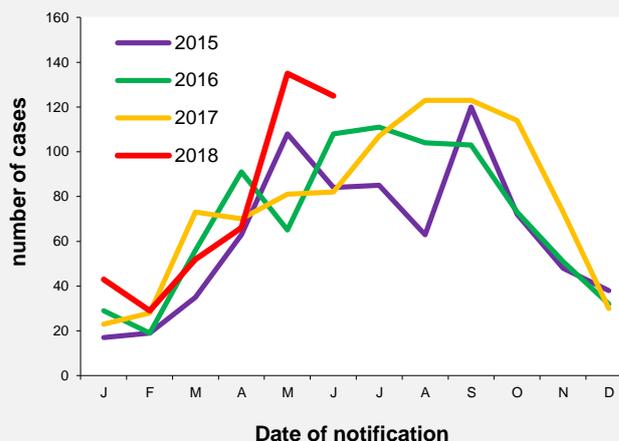


Figure 2. Seasonal distribution of VTEC cases notified 2015 to end Q2 2018

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 Q2 2018.

Table 11. Verotoxin typing profiles of *E. coli* referred to the HSE DML Public Health Laboratory, Cherry Orchard Hospital in Q2 2018

Serogroup	vt1	vt2	vt1+vt2	Not spec.	Total
O157	0	29	31	4	64
O26	32	5	99	1	137
Other	41	40	26	18	125
Total	73	74	156	23	326

Data Source: PHL Cherry Orchard

Outbreaks of VTEC infection

There were two general and forty-two family outbreaks of VTEC infection reported during this quarter (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 2018 are shown in Table 12. There were 1021 cases of campylobacteriosis notified in Q2 2018 compared to 875 in the same period in 2017 and 705 in Q2 2016 (Figure 3).

From August 2017, campylobacter 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.

Table 12. *Campylobacter* notifications by HSE-Area and month, Q2 2018

Month	E	M	MW	NE	NW	SE	S	W	Total
Apr	80	12	14	18	5	44	13	22	208
May	145	28	33	39	18	59	91	56	469
Jun	111	27	21	31	15	48	70	21	344
Total	336	67	68	88	38	151	174	99	1021

Outbreaks of *Campylobacter* infection

There was one general and one family outbreak of campylobacteriosis reported in Q2 2018 (Tables 1 and 2).

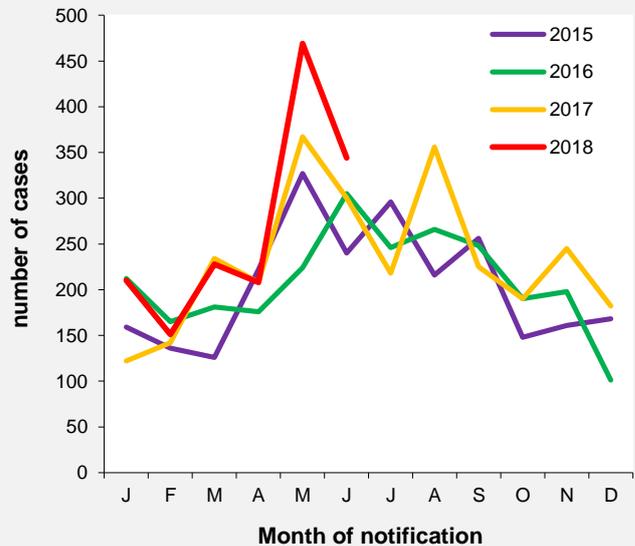


Figure 3. Seasonal distribution of *Campylobacter* notifications 2015 to end Q2 2018

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 Q2 2018, 346 cases of cryptosporidiosis were notified (Table 13), compared to 247 in the same period in 2017 and 288 in Q2 2016 (Figure 4).

Table 13. *Cryptosporidiosis* notifications by HSE-Area and month, Q2 2018

Month	E	M	MW	NE	NW	SE	S	W	Total
Apr	13	15	19	8	6	17	22	16	116
May	8	18	17	5	6	24	82	26	186
Jun	1	9	5	3	2	4	12	8	44
Total	22	42	41	16	14	45	116	50	346

Outbreaks of cryptosporidiosis

There was one general and nine family outbreaks of cryptosporidiosis reported in quarter 2 2018 (Tables 1 and 2).

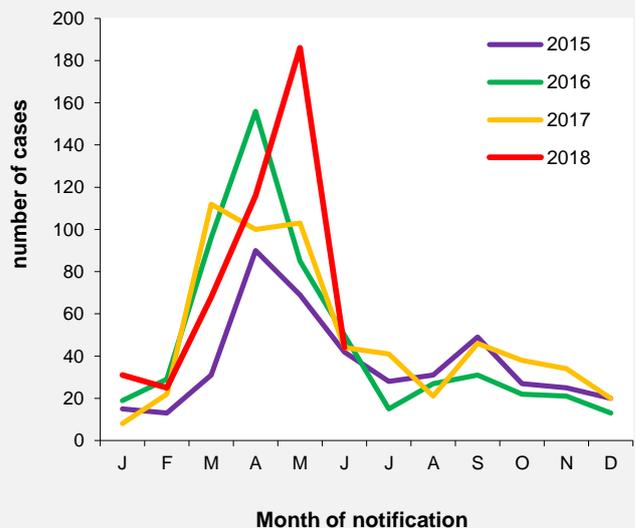


Figure 4. Seasonal distribution of *Cryptosporidium* notifications 2015 to end Q2 2018

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 327 cases notified in the second quarter of 2018 (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, Q2 2018

Month	E	M	MW	NE	NW	SE	S	W	Total
Apr	48	4	31	11	1	2	24	10	131
May	73	2	29	16	0	1	21	1	143
Jun	28	1	3	3	0	5	4	9	53
Total	149	7	63	30	1	8	49	20	327

Norovirus outbreaks

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

gastroenteritis in Ireland. In the second quarter of 2018, there were twenty-nine outbreaks confirmed as being caused by this virus, involving at least 353 people becoming ill, as outlined in tables 1 & 2. The seasonal trend is outlined in figure 5.

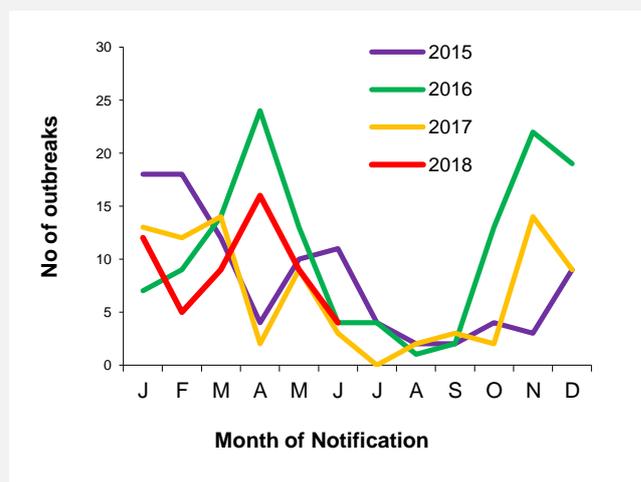


Figure 5. Seasonal distribution of confirmed norovirus outbreaks, 2015 to end Q2 2018

SHIGELLA

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

During Q2 2018, twenty-two cases of shigellosis were notified (Table 5). This compares with twenty-one cases notified in Q2 2017 and eighteen in Q2 2016.

Twelve cases were travel related and the country of infection was reported as Ireland for a further two cases. The country of infection was reported as unknown/not specified for the remaining eight cases.

Table 15: Species and serotype distribution of human *Shigella* isolates referred to the NSSLRL in Q2 2018

Serotype	Number of isolates
<i>Shigella boydii</i>	1
<i>Shigella flexneri</i>	1
<i>Shigella flexneri</i> 2a	3
<i>Shigella flexneri</i> 3a	1
<i>Shigella sonnei</i>	10

Data Source: NSSLRL

Outbreaks of shigellosis

There was one family outbreak and one general travel related outbreak of shigellosis notified in Q2 2018 (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 2, 2018, sixty cases of giardiasis were notified (Table 5); this compares with 53 cases notified in Q2 2017 and 58 in Q2 2016.

Five cases were reported to have acquired their illness abroad. Country of infection was reported as Ireland for twenty-one cases and 'not specified' or 'unknown' for the remaining thirty-four cases.

Outbreaks of giardiasis

There were four outbreaks of giardiasis notified in Q2 2018 (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 seven (five adult, one pregnancy-associated and one neonatal) cases of listeriosis notified in Q2 2018, compared to two cases in quarter 2 2017 and two in quarter 2 2016.

Outbreaks of listeriosis

There were no outbreaks of listeriosis notified in Q2 2018 (Table 2).

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

Table 16: Serotypes of human *Listeria* isolates referred to the NSSLRL in Q2 2018

Serotype	Number of isolates
4b	3
1/2a	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). Between March 2013 and July 2017, rotavirus notifications from HSE-East were 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.

Rotavirus notifications for the second quarter of 2018 are shown in Table 17 and Figure 6.

Table 17. Rotavirus infection by HSE-Area and month, Q2 2018

Month	E	M	MW	NE	NW	SE	S	W	Total
Apr	30	7	4	5	2	12	4	2	66
May	47	11	8	13	6	15	7	9	116
Jun	20	7	6	9	2	15	14	8	81
Total	97	25	18	27	10	42	25	19	263

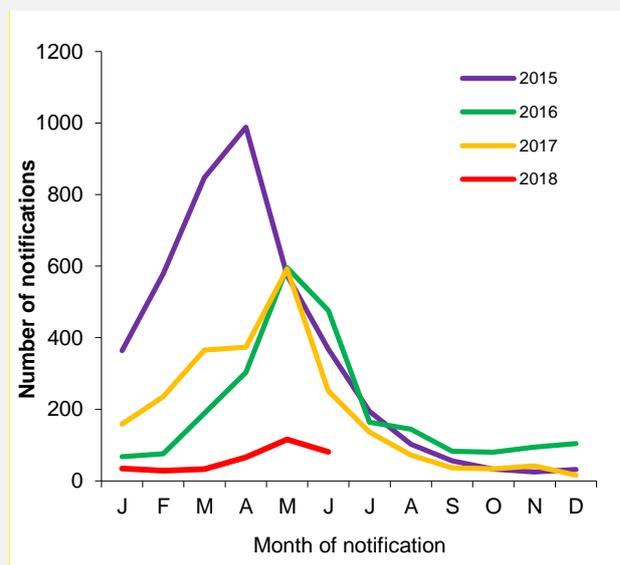


Figure 6. Seasonal distribution of rotavirus notifications, 2015 to end Q2 2018

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 reported in Q2 2018.

NON-IID ZONOTIC DISEASES

Non-IID zoonoses now notifiable include: anthrax, brucellosis, echinococcosis, leptospirosis, plague, Q fever, toxoplasmosis, trichinosis and rabies. The Q2 2018 notifications of these zoonotic diseases are reported by HSE-Area in Table 5.

Fourteen cases of toxoplasmosis were notified in this quarter. This compares with three cases notified in the same period in 2017 and two cases in Q2 2016.

There were three cases of leptospirosis notified in Q2 2018. This compares with one case in Q2 2017 and one case in Q2 2016.

Two leptospirosis cases this quarter are believed to have acquired their infection occupationally while one case is believed to have been exposed during recreational/leisure activity.

There were no cases of brucellosis notified in Q2 2018. This compares with none in Q2 2017 and none in the same period in 2016.

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

MALARIA

Malaria has been a notifiable disease for many years. The Q2 2018 notifications are reported in Table 5 by HSE-Area.

Eleven cases of malaria were notified in Q2 2018. This compares with twenty-one cases reported in Q2 2017 and nineteen in Q2 2016.

Ten cases this quarter were reported as *P. falciparum* and one as *P. malariae*.

Three cases were exposed in Sub-Saharan Africa. Country of infection is unknown/not specified for the remaining eight cases this quarter.

One case cited 'visiting family in country of origin' as their reason for travel and one case was undertaking voluntary work. Travel information was not specified/unknown for the remaining nine cases this quarter.

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. Zika virus infection is a notifiable disease in Ireland under the Infectious Diseases (Amendment) Regulations 2016 (S.I. No. 276 of 2016).

The Q2 2018 notifications are reported in Table 5 by HSE-Area.

There were two cases of Lyme disease (neuroborreliosis) reported in Q2 2018.

There were five cases of Dengue fever notified in Q2 2018. Three were associated with travel to SE Asia and one with travel to central Africa. Country of infection was not specified for the remaining case.

There were no notifications of Chikungunya disease, West Nile or Zika virus infection fever this quarter.

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