

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 4–2018

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This is the fourth quarterly report for 2018 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 Q4, 2018

Month	HSE area	Location	No. ill *	No. Hosp.	Date Onset	Suspect mode of transmission	Disease
Oct	E	Residential institution	11			P-P	AIG
Oct	SE	Nursing home	43		28/09/2018	Unknown	Noroviral infection
Oct	HPSC	Travel related	25		07/09/2018	Unknown	Salmonellosis
Oct	HPSC	Travel related	20	1	01/09/2018	Unknown	Cryptosporidiosis
Oct	M	Hospital	6			Unknown	Noroviral infection
Oct	MW	Comm. Hosp/Long-stay unit	15	0	23/09/2018	P-P	Noroviral infection
Oct	S	Comm. Hosp/Long-stay unit	3	0	08/10/2018	P-P	AIG
Oct	S	Comm. Hosp/Long-stay unit	3	0	10/10/2018	P-P	AIG
Oct	MW	Comm. Hosp/Long-stay unit	6	0	08/10/2018	P-P & AB	Noroviral infection
Oct	E	Comm. Hosp/Long-stay unit	5		13/10/2018	P-P	Noroviral infection
Oct	S	Hotel	5	1	29/09/2018	WB	Cryptosporidiosis
Oct	S	Community outbreak	11		24/08/2018	Unknown	VTEC
Oct	S	Comm. Hosp/Long-stay unit	2		08/08/2018	Not Specified	Clostridium difficile infection
Oct	E	Other	8	0		P-P & AB	AIG
Nov	M	Nursing home	13		26/10/2018	P-P & AB	Noroviral infection
Nov	E	Hospital	6			P-P & AB	Noroviral infection
Nov	HPSC	Community outbreak	6	1	07/10/2018	Unknown	Shigellosis
Nov	E	Childcare facility	32		29/10/2018	P-P	Rotavirus infection
Nov	E	Workplace	32		31/10/2018	P-P	AIG
Nov	SE	Comm. Hosp/Long-stay unit	4		29/10/2018	P-P	AIG
Nov	W	Nursing home	37	0	02/11/2018	P-P	Noroviral infection
Nov	E	Hospital	3	3		P-P	Clostridium difficile infection
Nov	E	Comm. Hosp/Long-stay unit	3		07/11/2018	P-P	Noroviral infection
Nov	E	Comm. Hosp/Long-stay unit	6		07/11/2018	P-P	Noroviral infection
Nov	M	Comm. Hosp/Long-stay unit	11	0		P-P & AB	AIG
Nov	E	School	6		06/11/2018	P-P	AIG
Nov	E	Hospital	4		08/09/2018	P-P	Clostridium difficile infection
Nov	NW	Residential institution	2	0	10/11/2018	P-P	AIG
Nov	E	Nursing home	10	0	08/11/2018	P-P	Noroviral infection
Nov	S	Residential institution	14	0	17/10/2018	P-P	Noroviral infection
Nov	S	Nursing home	10	1	03/11/2018	P-P	Noroviral infection
Nov	NE	Nursing home	22	1	14/11/2018	P-P	Noroviral infection
Nov	NW	Nursing home	10		13/11/2018	P-P	AIG
Nov	S	Nursing home	25	0	10/11/2018	P-P	Noroviral infection
Nov	E	Nursing home	8	2	17/11/2018	P-P	AIG
Nov	E	Hospital	15	7	19/11/2018	P-P	Noroviral infection
Nov	SE	Nursing home	9		23/11/2018	P-P	Noroviral infection
Nov	S	Other	15	0	16/11/2018	P-P	AIG
Nov	E	Childcare facility	3	0		P-P	AIG
Nov	S	Comm. Hosp/Long-stay unit	10	0	17/11/2018	P-P	AIG
Nov	S	Comm. Hosp/Long-stay unit	6	0	02/11/2018	P-P	Noroviral infection

Month	HSE area	Location	No. ill *	No. Hosp.	Date Onset	Suspect mode of transmission	Disease
Nov	S	Hotel	56	1	21/11/2018	P-P	AIG
Nov	W	Hospital	13	0		P-P	Noroviral infection
Nov	SE	Nursing home	6		24/11/2018	Unknown	AIG
Nov	E	Nursing home	4		29/11/2018	P-P	AIG
Nov	S	Comm. Hosp/Long-stay unit	7	0	26/11/2018	P-P	AIG
Nov	E	Childcare facility	5		26/11/2018	P-P	AIG
Nov	E	Comm. Hosp/Long-stay unit	6		23/11/2018	P-P	Noroviral infection
Nov	NE	Nursing home	4	0	27/11/2018	P-P	AIG
Dec	E	Comm. Hosp/Long-stay unit	10		30/11/2018	P-P	Noroviral infection
Dec	M	Workplace	11			Unknown	AIG
Dec	MW	Hospital	6			Environmental / Fomite	Clostridium difficile infection
Dec	W	Nursing home	19	1	02/12/2018	P-P	Noroviral infection
Dec	E	Comm. Hosp/Long-stay unit	8		07/12/2018	P-P	Noroviral infection
Dec	MW	Hospital	4	4		P-P	Noroviral infection
Dec	E	Travel associated	6		12/11/2018	FB	Salmonellosis
Dec	SE	Nursing home	23		11/12/2018	P-P	Noroviral infection
Dec	E	Nursing home	14		21/11/2018	P-P	Noroviral infection
Dec	S	Residential institution	4	0	10/12/2018	P-P	AIG
Dec	S	Residential institution	4	0	10/12/2018	P-P	AIG
Dec	E	Hospital	2			P-P	Clostridium difficile infection
Dec	S	Nursing home	13	0	13/12/2018	P-P	AIG
Dec	NW	Comm. Hosp/Long-stay unit	24		14/12/2018	P-P	Noroviral infection
Dec	NW	Nursing home	9		17/12/2018	P-P	Noroviral infection
Dec	E	Hospital	6			P-P	Noroviral infection
Dec	E	Nursing home	7		23/12/2018	P-P & FB	Campylobacter 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 Q4, 2018

Month	HSE area	Location	No. ill *	No. Hosp.	Date Onset	Suspect mode of transmission	Disease
Oct	MW	Private house	2	1	06/08/2018	P-P	VTEC
Oct	S	Private house	2	0	08/09/2018	WB	VTEC
Oct	MW	Private house			10/09/2018	P-P	Shigellosis
Oct	W	Private house	1	1	11/09/2018	Unknown	VTEC
Oct	SE	Private house	1	1	23/09/2018	P-P	VTEC
Oct	M	Private house	1	1	01/10/2018	Unknown	VTEC
Oct	M	Private house	1	1	27/09/2018	Unknown	VTEC
Oct	M	Private house	1			Unknown	VTEC
Oct	M	Private house	1	0	10/09/2018	Unknown	VTEC
Oct	M	Private house	1		05/10/2018	Environmental / Fomite	VTEC
Oct	SE	Not Specified	2	0	29/09/2018	P-P	VTEC
Oct	M	Private house	1			Unknown	VTEC
Oct	S	Extended family	3	1	22/09/2018	P-P	VTEC

Oct	M	Private house	1			Unknown	VTEC
Oct	SE	Private house	2	1	07/10/2018	P-P	VTEC
Oct	S	Private house	2		14/09/2018	Unknown	Giardiasis
Oct	S	Private house	2		28/09/2018	P-P	VTEC
Oct	M	Private house	3		29/10/2018	Other	Noroviral infection
Nov	M	Private house	1	1		Unknown	VTEC
Nov	MW	Private house	3	0	12/10/2018	P-P	VTEC
Nov	MW	Other	2		02/10/2018	P-P	VTEC
Nov	S	Private house	4	1	23/10/2018	Unknown	Cryptosporidiosis
Nov	SE	Other	1	1	18/09/2018	Unknown	VTEC
Nov	S	Private house	2	1	25/10/2018	P-P	Shigellosis
Nov	MW	Private house			19/10/2018	P-P	VTEC
Nov	M	Private house				Unknown	VTEC
Nov	SE	Private house	2	1	26/10/2018	Unknown	VTEC
Nov	S	Private house	4	0	11/09/2018	P-P & WB	Giardiasis
Nov	E	Private house	2	0	01/08/2018	P-P	Shigellosis
Nov	E	Hospital	6		25/11/2018	P-P	AIG
Nov	M	Private house	2	0	18/11/2018	Unknown	VTEC
Dec	M	Not Specified				Not Specified	VTEC
Dec	S	Private house	3	1	29/11/2018	P-P	Salmonellosis
Dec	E	Private house			28/11/2018	P-P	Giardiasis
Dec	M	Not Specified				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-IID outbreaks in Q4, 2018

Month	HSE area	Type of outbreak	Location	No. ill *	No. Hosp.	Date Onset	Suspect mode of transmission	Organism
Oct	NW	General	School	8	1	11/09/2018	P-P	Mumps
Oct	E	General	Hospital	2 colonised			Unknown	CPE colonisation
Oct	SE	Family	Private house	2	2	29/08/2018	P-P	Hepatitis A (acute)
Oct	S	General	Childcare facility	5			P-P	Scarlet Fever
Oct	W	General	Other	79	2	11/01/2018	P-P	Mumps
Oct	M	General	Comm. Hosp/Long-stay unit	4	0		Unknown	Acute respiratory infection
Oct	S	General	Residential institution	2	0	05/09/2018	P-P	Mumps
Oct	W	Family	Private house	2	1	04/10/2018	P-P	Pertussis
Oct	E	General	Other	9	0	08/08/2018	P-P	Scabies
Oct	M	General	Comm. Hosp/Long-stay unit	4		03/11/2010	Not Specified	Acute respiratory infection
Oct	E	General	Nursing home	11		12/10/2018	P-P & AB	Acute respiratory infection
Oct	NE	General	Hospital	9 colonised	9		P-P	VRE colonisation
Oct	S	Family	Not Specified	2	2	28/09/2018	P-P	Hepatitis A (acute)
Oct	S	General	Hospital	4 colonised			Not Specified	CPE colonisation
Oct	W	General	School	8	0	03/10/2018	P-P	Mumps
Oct	E	Family	Private house	2	0	23/09/2018	P-P & AB	Measles
Oct	SE	General	Hospital	3 colonised			Unknown	CPE colonisation
Oct	S	General	Comm. Hosp/Long-stay unit	14	2	26/10/2018	P-P & AB	Acute respiratory infection

Month	HSE area	Type of outbreak	Location	No. ill *	No. Hosp.	Date Onset	Suspect mode of transmission	Organism
Nov	S	Family	Private house	3	2	29/10/2018	P-P & AB	Influenza
Nov	E	General	Other	2		05/08/2018	P-P & AB	Tuberculosis
Nov	SE	General	Nursing home	27	2	31/10/2018	P-P & AB	Acute respiratory infection
Nov	SE	General	Comm. Hosp/Long-stay unit	7	3	23/10/2018	AB	Influenza
Nov	NE	General	Hospital	2 (invasive cases)	12 (incl. 10 colonisations)		P-P	Carbapenem-resistant Enterobacteriaceae infection (invasive)
Nov	NE	General	School	21		26/09/2018	P-P	Mumps
Nov	M	General	University/College	5		21/10/2018	P-P & AB	Mumps
Nov	S	General	Community outbreak	3	3	27/09/2018	P-P	Hepatitis A (acute)
Nov	W	General	School	7		09/11/2018	P-P	Mumps
Nov	NE	General	Community outbreak	16		24/10/2018	P-P & AB	Mumps
Nov	NW	General	Comm. Hosp/Long-stay unit	9			P-P	RSV
Nov	NW	General	Nursing home	4	0	15/11/2018	P-P	RSV
Nov	NW	Family	Private house	3		01/10/2018	P-P	Pertussis
Nov	NW	General	University/College	6			Not Specified	Gonorrhoea
Nov	S	Family	Private house	3	0	13/11/2018	P-P	Influenza
Nov	W	General	Residential institution	13	1	24/11/2018	P-P	Acute respiratory infection
Nov	S	Family	Extended family	3		01/05/2018	P-P	Tuberculosis
Dec	E	General	University/College	5			P-P	Mumps
Dec	S	General	Comm. Hosp/Long-stay unit	12	0	27/11/2018	P-P & AB	Acute respiratory infection
Dec	E	General	Nursing home	7		30/11/2018	AB	Acute respiratory infection
Dec	NW	General	Comm. Hosp/Long-stay unit	12	1	07/12/2018	P-P	RSV
Dec	E	General	Hospital	2 colonised		05/12/2018	P-P	CPE colonisation
Dec	E	General	Hospital	3 colonised			P-P	VRE colonisation
Dec	E	General	Comm. Hosp/Long-stay unit	15		15/12/2018	P-P & AB	Para-Influenza
Dec	NE	General	School	15		01/12/2018	P-P	Mumps
Dec	S	General	Comm. Hosp/Long-stay unit	5	0	17/12/2018	P-P & AB	Acute respiratory infection
Dec	E	General	Hospital	2	2	14/11/2018	P-P	Influenza
Dec	NW	General	University/College	5	0	22/11/2018	P-P	Mumps
Dec	W	General	Comm. Hosp/Long-stay unit	23	0		P-P	Scabies
Dec	NE	General	Nursing home	33	4	23/12/2018	P-P	Influenza

P-P denotes Person-to-Person transmission, WB denotes waterborne; AB denotes airborne; NK denotes unknown; CPE denotes Carbapenem-resistant 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 fourth quarter of 2018. There were 66 general and 35 family IID outbreaks reported during this period, resulting in at least 809 people being ill.

Norovirus (n=29) and Acute infectious gastroenteritis (n= 24) were responsible for the most general outbreaks of IID (80%).

Fifty-three general IID outbreaks were transmitted person-to-person/person-to-person & airborne (80%). Fifty-two general IID outbreaks (79%) 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=25) [71%]. Other pathogens responsible for family outbreaks in Q4 2018 were AIG, cryptosporidiosis, giardiasis, norovirus, salmonellosis and shigellosis (Table 2).

There were forty-eight non-IID outbreaks reported during Q4 2018 (Table 3). The most common cause of non IID outbreaks was mumps (n=11) [23%].

Table 4 outlines the outbreak rate per HSE-area for outbreaks notified during Q4 2018.

Table 4. Number of infectious disease outbreaks by HSE Area, Q4 2018

HSE Area	No. of outbreaks	Rate per 100,000 population
E	39	2.0
M	20	7.0
MW	9	2.0
NE	8	2.0
NW	11	4.0
SE	14	3.0
S	35	5.0
W	10	2.0
Total	146*	3.0

*excludes 3 outbreaks notified by HPSC

NOTIFICATIONS OF INFECTIOUS INTESTINAL, ZONOTIC AND VECTORBORNE DISEASE

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

Table 5. Infectious intestinal, zoonotic and vectorborne disease notifications Q4, 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	255	33	40	50	13	72	94	45	602
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	15	16	3	2	12	5	22	3	78
Giardiasis	23	9	2	2	0	9	25	8	78
Listeriosis	1	0	0	0	0	0	0	0	1
Noroviral infection ²	185	20	36	28	3	10	36	16	334
Paratyphoid	1	0	0	0	0	0	0	0	1
Rotavirus infection ³	40	3	11	15	3	2	17	13	104
Salmonellosis	41	4	5	11	5	9	12	8	95
Shigellosis	13	3	5	1	0	2	6	1	31
Staphylococcal food poisoning	0	0	0	0	0	0	0	0	0
Typhoid	3	1	0	0	0	0	0	0	4
Verotoxigenic <i>Escherichia coli</i> infection	25	9	27	20	5	33	33	19	171
Yersiniosis	1	0	0	0	0	0	0	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	1	0	0	0	1
Leptospirosis	3	0	1	0	0	2	1	2	8
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	0	3	1	0	0	1	2	1	8
Trichinosis	0	0	0	0	0	0	0	0	0
Vectorborne Disease									
Chikungunya disease	0	0	0	0	0	0	0	0	0
Dengue	3	0	0	0	0	0	1	2	6
Lyme disease (neuroborreliosis)	0	0	0	0	0	2	2	2	6
Malaria	6	1	0	0	0	2	1	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 fourth quarter of 2018. Comparison of trends with previous years is shown in Figure 1.

Table 6. Salmonellosis notifications by HSE-Area and month, Q4 2018

Month	E	M	MW	NE	NW	SE	S	W	Total
Oct	17	3	3	9	3	7	6	4	52
Nov	6	1	1	1	2	1	0	2	14
Dec	18	0	1	1	0	1	6	2	29
Total	41	4	5	11	5	9	12	8	95

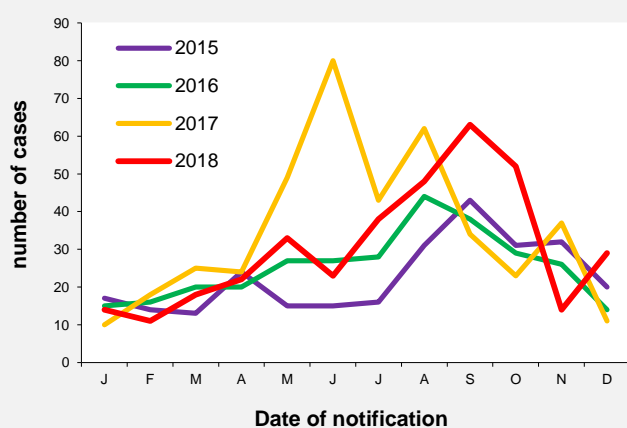


Figure 1. Seasonal distribution of human salmonellosis notifications, 2015 to end Q4 2018

Table 7 shows the serotypes for the *Salmonella* isolates typed by the NSSLRL in the fourth quarter of 2018 by HSE area (n=97). The commonest human serotypes reported this quarter were *S. Typhimurium** (n=30, 31%) and *S. Enteritidis* (n=28, 29%).

Table 8 shows the serotype distribution of confirmed *Salmonella* cases by travel status this quarter among confirmed salmonellosis notifications on CIDR. 36% (n=31) were travel-associated, 52% (n=44) were indigenous and

for 10 cases, the country of infection was unknown/not specified.

Table 7. Serotypes of human *Salmonella* isolates referred to NSSLRL Q4 2018

Serotype	E	M	MW	NE	NW	SE	S	W	Total
4,[5],12:i:-	5	1	1	0	0	1	0	1	9
Agama	0	0	0	1	0	0	0	0	1
Agona	0	0	0	0	0	0	1	0	1
Braenderup	1	0	0	0	0	0	0	0	1
Bredeney	0	0	0	0	0	0	1	0	1
Corvallis	1	0	0	0	0	0	0	0	1
Derby	0	0	0	0	0	0	0	2	2
Dublin	0	0	0	0	0	0	0	1	1
Eastbourne	0	0	0	0	0	1	0	0	1
Enteritidis	11	0	2	4	1	3	6	1	28
Freetown	0	0	0	0	1	0	0	0	1
Heidelberg	1	0	0	0	0	0	0	0	1
Infantis	1	0	0	0	1	0	0	0	2
Java	0	0	0	0	0	1	0	0	1
Kentucky	0	0	0	0	0	0	1	0	1
Kottbus	0	0	0	1	0	0	0	1	2
Mbandaka	0	0	0	0	0	1	0	0	1
Montevideo	0	0	0	1	0	0	0	1	2
Newport	4	0	0	0	0	0	0	1	5
Paratyphi A	1	0	0	0	0	0	0	0	1
Ruiru	1	0	0	0	0	0	0	0	1
Saintpaul	1	0	0	0	0	0	0	0	1
Senftenberg	0	1	0	0	0	0	0	0	1
Stanley	1	0	0	0	0	0	0	0	1
Telekebir	0	0	0	0	0	1	0	0	1
Thompson	0	0	0	0	0	0	0	1	1
Typhi	4	1	0	0	0	0	0	0	5
Typhimurium	5	1	3	2	2	4	3	1	21
Virchow	0	0	0	0	1	0	0	1	2
Total	37	4	6	9	6	12	12	11	97

Data Source: NSSLRL

Table 8. Confirmed *Salmonella* notifications by serotype and travel status, Q4 2018 [n(%)]

Serotype	Indigenous	Travel-associated	Unk/not specified	Total
S. Enteritidis	11 (25%)	9 (29%)	2 (20%)	22 (26%)
S. Typhimurium*	11 (25%)	12 (39%)	2 (20%)	25 (29%)
Other	18 (41%)	8 (26%)	3 (30%)	29 (34%)
<i>Salmonella</i> spp	4 (9%)	2 (6%)	3 (30%)	9 (10%)
Total	44 (100%)	31 (100%)	10 (100%)	85 (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:-

* Includes 9 cases of monophasic *S. Typhimurium* 4,5,12:i:-

S. Typhi and S. Paratyphi

There were four cases of typhoid reported in Q4 2018 – two associated with travel to the Indian Sub-Continent and one associated with travel to Central Asia. Country of infection is unknown for the remaining case.

There was one case of Paratyphoid notified this quarter, associated with travel to the Indian Sub-Continent.

Outbreaks of S. Typhi and S. Paratyphi

There were no outbreaks of typhoid or paratyphoid notified in Q4 2018.

Outbreaks of salmonellosis

There were three outbreaks of salmonellosis notified in Q4 2018 – one family outbreak and two general outbreaks associated with foreign travel. (Tables 1 & 2).

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 seventy-one cases of VTEC were notified this quarter, the regional distribution of which is shown in Table 9. This compares with 214 VTEC cases notified in Q4 2017 and 156 in Q4 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, Q4 2018.

Table 9. Number VTEC notified by case classification and HSE-area, Q4 2018

Case classification	E	M	MW	NE	NW	SE	S	W	Total
Confirmed	25	9	27	17	5	30	32	17	162
Probable	0	0	0	3	0	3	1	2	9
Possible	0	0	0	0	0	0	0	0	0
Total	25	9	27	20	5	33	33	19	171

Table 10. VTEC notified by serogroup and month, Q4 2018

Month	O157	O26	Other	Total
Oct	23	19	47	89
Nov	10	9	24	43
Dec	5	3	31	39
Total	38	31	102	171

Seven VTEC cases notified this quarter were reported as having developed HUS – three O157, two O26, one ungroupable strain and one case diagnosed on clinical criteria.

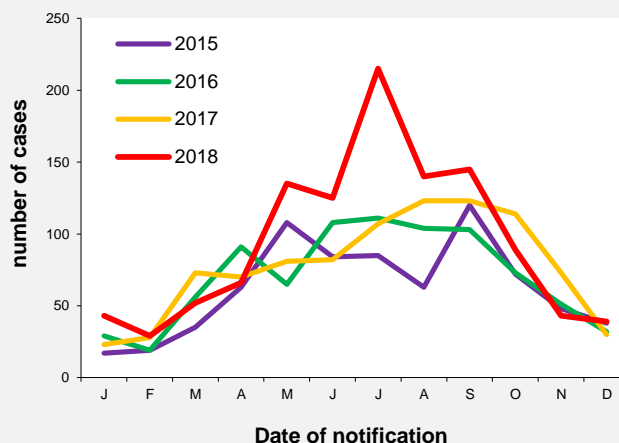


Figure 2. Seasonal distribution of VTEC cases notified 2015 to end Q4 2018

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 Q4 2018.

Table 11. Verotoxin typing profiles of *E. coli* referred to the HSE DML Public Health Laboratory, Cherry Orchard Hospital in Q4 2018

Serogroup	vt1	vt2	vt1+vt2	Not spec.	Total
O157	2	29	5	2	38
O26	4	6	20	1	31
Other	34	35	25	8	102
Total	40	70	50	11	171

Data Source: PHL Cherry Orchard

Outbreaks of VTEC infection

There was one general outbreak and twenty-five 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 fourth quarter of 2018 are shown in Table 12. There were 602 cases of campylobacteriosis notified in Q4 2018 compared to 617 in the same period in 2017 and 489 in Q4 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, Q4 2018

Month	E	M	MW	NE	NW	SE	S	W	Total
Oct	112	12	15	24	6	29	37	16	251
Nov	80	11	12	12	1	18	30	14	178
Dec	63	10	13	14	6	25	27	15	173
Total	255	33	40	50	13	72	94	45	602

Outbreaks of Campylobacter infection

There was one general outbreak of campylobacteriosis reported in Q4 2018 (Tables 1 and 2).

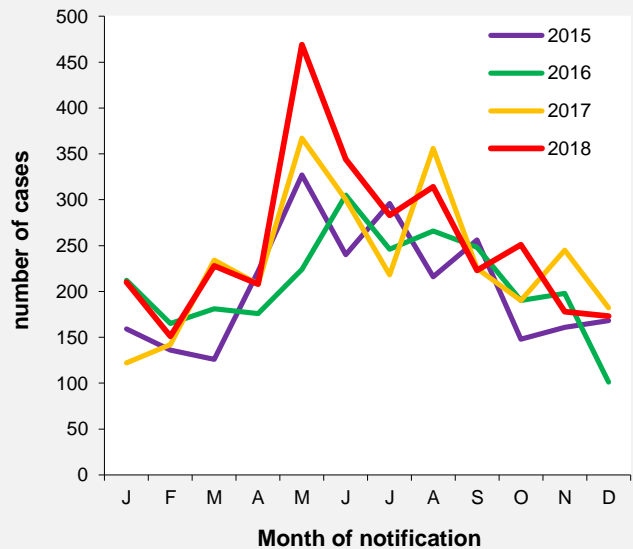


Figure 3. Seasonal distribution of Campylobacter notifications 2015 to end Q4 2018

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 Q4 2018, 78 cases of cryptosporidiosis were notified (Table 13), compared to 92 in the same period in 2017 and 56 in Q4 2016 (Figure 4).

Table 13. Cryptosporidiosis notifications by HSE-Area and month, Q4 2018

Month	E	M	MW	NE	NW	SE	S	W	Total
Oct	7	8	0	1	11	1	11	1	40
Nov	4	5	2	0	1	3	9	1	25
Dec	4	3	1	1	0	1	2	1	13
Total	15	16	3	2	12	5	22	3	78

cryptosporidiosis reported in quarter 4 2018. (Tables 1 and 2).

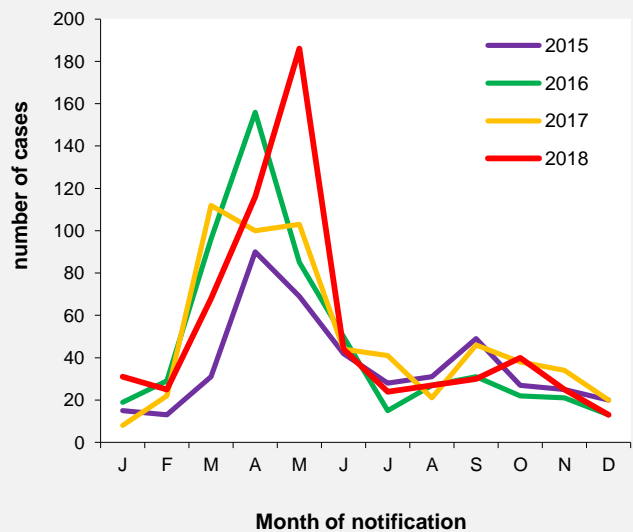


Figure 4. Seasonal distribution of cryptosporidiosis notifications 2015 to end Q4 2018

Outbreaks of cryptosporidiosis

There were two general outbreaks of cryptosporidiosis, one associated with foreign travel. There was one family outbreak of

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 334 cases notified in the fourth 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, Q4 2018

Month	E	M	MW	NE	NW	SE	S	W	Total
Oct	44	14	11	6	1	4	18	3	101
Nov	75	1	7	16	0	3	15	4	121
Dec	66	5	18	6	2	3	3	9	112
Total	185	20	36	28	3	10	36	16	334

Norovirus outbreaks

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

gastroenteritis in Ireland. In the fourth quarter of 2018, there were thirty outbreaks confirmed as being caused by this virus, involving at least 390 people becoming ill, as outlined in tables 1 & 2. The seasonal trend is outlined in figure 5.

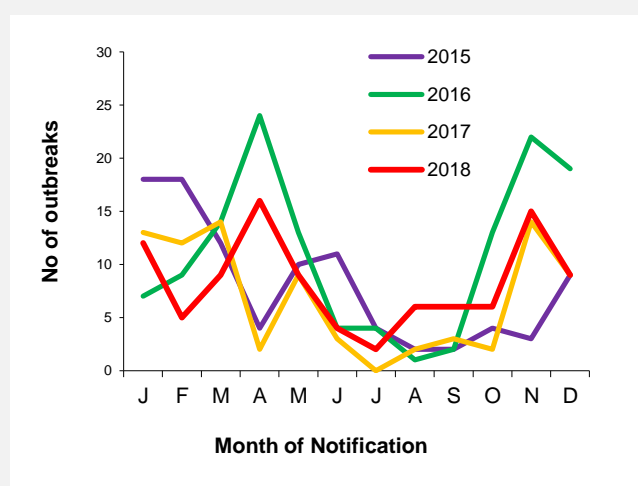


Figure 5. Seasonal distribution of confirmed norovirus outbreaks, 2015 to end Q4 2018

SHIGELLA

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

During Q4 2018, thirty-one cases of shigellosis were notified (Table 5). This compares with thirty-five cases notified in Q4 2017 and twenty-six in Q4 2016.

Eight cases were travel related and the country of infection was reported as Ireland for a further ten cases. The country of infection was reported as unknown/not specified for the remaining thirteen cases.

Table 15: Species and serotype distribution of human *Shigella* isolates referred to the NSSLRL in Q4 2018

Serotype	Number of isolates
<i>Shigella sonnei</i>	15
<i>Shigella flexneri</i>	6
Total	21

Data Source: NSSLRL

Outbreaks of shigellosis

There was one general outbreak and three family outbreaks of shigellosis notified in Q4 2018 (Tables 1 & 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 4, 2018, seventy-eight cases of giardiasis were notified (Table 5); this compares with 50 cases notified in Q4 2017 and 45 in Q4 2016.

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

Outbreaks of giardiasis

There were three family outbreaks of giardiasis notified in Q4 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 was one adult case of listeriosis notified in Q4 2018, compared to four cases in quarter 4 2017 and one in quarter 4 2016.

Outbreaks of listeriosis

There were no outbreaks of listeriosis notified in Q4 2018 (Table 2).

One isolate was referred for typing to NSSLRL this quarter (Table 16).

Table 16: Serotypes of human *Listeria* isolates referred to the NSSLRL in Q4 2018

Serotype	Number of isolates
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 fourth quarter of 2018 are shown in Table 17 and Figure 6.

Table 17. Rotavirus infection by HSE-Area and month, Q4 2018

Month	E	M	MW	NE	NW	SE	S	W	Total
Oct	9	2	5	5	1	1	8	2	33
Nov	10	1	3	5	2	1	5	7	34
Dec	21	0	3	5	0	0	4	4	37
Total	40	3	11	15	3	2	17	13	104

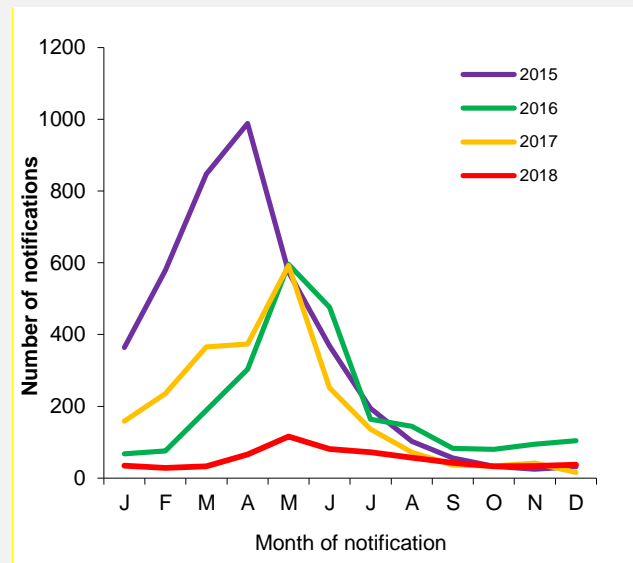


Figure 6. Seasonal distribution of rotavirus notifications, 2015 to end Q4 2018

Outbreaks of rotavirus

There was one general outbreak 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 Q4 2018.

There were no cases of foodborne infection/intoxication reported in Q4 2018.

NON-IID ZONOTIC DISEASES

Non-IID zoonoses now notifiable include: anthrax, brucellosis, echinococcosis, leptospirosis, plague, Q fever, toxoplasmosis, trichinosis and rabies. The Q4 2018 notifications of these zoonotic diseases are reported by HSE-Area in Table 5.

Eight cases of toxoplasmosis were notified in this quarter. This compares with three cases notified in the same period in 2017 and three cases in Q4 2016.

There were eight cases of leptospirosis notified in Q4 2018. This compares with seven cases in Q4 2017 and sixteen cases in Q4 2016.

Four leptospirosis cases this quarter are believed to have acquired their infection occupationally while two cases cited river water contact during leisure activity. One case reported animal contact in the home and one case was associated with travel to SE Asia.

There were no cases of brucellosis notified in Q4 2018. This compares with two cases in Q4 2017 and two in the same period in 2016.

There was one case of echinococcosis reported in Q4 2018. This compares with no cases in the same period in 2017 and one case in Q4 2016.

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

MALARIA

Malaria has been a notifiable disease for many years. The Q4 2018 notifications are reported in Table 5 by HSE-Area.

Eleven cases of malaria were notified in Q4 2018. This compares with nineteen cases reported in Q4 2017 and seventeen in Q4 2016.

Seven cases this quarter were reported as *P. falciparum*, two as *P. ovale* and one as *P. vivax*. The organism was not specified for one remaining case.

Five cases were exposed in Sub-Saharan Africa and one in the Indian Sub-Continent. Country of infection is unknown/not specified for the remaining five cases this quarter.

Three cases cited 'visiting family in country of origin' as their reason for travel. One case was reported in a new entrant to Ireland, one in a foreign student studying in Ireland and one in an Irish citizen living abroad. Travel information was not specified/unknown for the remaining five 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 Q4 2018 notifications are reported in Table 5 by HSE-Area.

There were six cases of Lyme disease (neuroborreliosis) reported in Q4 2018. This compares with two cases in the same period in 2017 and seven cases in Q4 2016.

There were six cases of Dengue fever notified in Q4 2018. This compares with three cases in the same period in 2017 and four cases in Q4 2016.

Three cases this quarter were associated with travel to the Indian Sub-Continent. Country of

infection was not specified for the remaining three cases.

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

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