

# 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 –2017**

**April 2018**

This is the fourth quarterly report for 2017 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, 2017**

Month	HSE area	Location	No. ill *	No. Hosp.	Date Onset	Suspect mode of transmission	Disease
Oct	M	Childcare facility	6	0	26/09/2017	Unknown	VTEC
Oct	MW	Residential institution	30	0	05/10/2017	P-P & AB	AIG
Oct	SE	Nursing home	23	0	29/09/2017	P-P	Norovirus
Oct	HPSC	Travel related	4	1	28/07/2017	Unknown	Salmonellosis
Oct	HPSC	Travel related	8	3	-	Unknown	Salmonellosis
Oct	NW	Comm. Hosp/Long-stay unit	4	-	04/10/2017	Not Specified	Clostridium difficile
Oct	S	Childcare facility	13	0	06/10/2017	P-P	Sapovirus
Oct	NE	Nursing home	35	0	13/10/2017	P-P	Norovirus
Oct	SE	Hospital	5	-	12/10/2017	P-P	AIG
Oct	SE	Comm. Hosp/Long-stay unit	6	-	16/10/2017	Unknown	Clostridium difficile
Oct	W	Community outbreak	2	2	10/10/2017	WB	VTEC
Nov	M	Comm. Hosp/Long-stay unit	19	0	-	Unknown	Norovirus
Nov	S	Residential institution	6	0	26/10/2017	P-P	AIG
Nov	M	Childcare facility	3	0	24/09/2017	Unknown	Cryptosporidiosis
Nov	S	Residential institution	12	-	03/11/2017	Unknown	Norovirus
Nov	MW	Nursing home	-	-	04/11/2017	Unknown	Norovirus
Nov	MW	Hospital	3	-	01/05/2017	Environmental / Fomite	Clostridium difficile
Nov	MW	Restaurant / Cafe	10	0	12/11/2017	Unknown	AIG
Nov	M	Nursing home	-	2	-	Unknown	Norovirus
Nov	S	Childcare facility	26	0	10/11/2017	P-P	Norovirus
Nov	MW	Nursing home	18	0	03/11/2017	P-P & AB	Norovirus
Nov	E	Nursing home	71	-	18/11/2017	P-P & AB	Norovirus
Nov	E	Nursing home	12	-	15/11/2017	P-P & AB	AIG
Nov	E	Nursing home	16	-	01/02/2017	P-P & AB	Norovirus
Nov	E	Nursing home	13	-	29/10/2017	P-P, FB & AB	Norovirus
Nov	E	Nursing home	10	-	25/09/2017	P-P, FB & AB	Norovirus
Nov	NE	Residential institution	3	-	19/11/2017	P-P	AIG
Nov	E	Residential institution	4	-	28/10/2017	P-P & AB	Norovirus
Nov	MW	Hospital	-	-	25/11/2017	AB	Norovirus
Nov	MW	Nursing home	7	0	27/11/2017	P-P	Norovirus
Nov	M	Comm. Hosp/Long-stay unit	13	0	-	Unknown	Norovirus
Dec	S	Residential institution	5	0	24/11/2017	Not Specified	AIG
Dec	E	Hospital	14	-	26/11/2017	P-P	Norovirus
Dec	E	Nursing home	3	0	26/11/2017	P-P	Norovirus
Dec	NE	Nursing home	16	0	04/12/2017	P-P	AIG
Dec	SE	Residential institution	10	-	02/12/2017	P-P	Norovirus
Dec	NE	Residential institution	18	0	23/11/2017	P-P	Norovirus
Dec	NE	Nursing home	7	0	04/12/2017	P-P	AIG
Dec	SE	Residential institution	13	-	08/12/2017	P-P	Norovirus
Dec	S	Comm. Hosp/Long-stay unit	11	-	06/12/2017	P-P	Sapovirus
Dec	W	Hospital	2	2	-	P-P	Clostridium difficile
Dec	E	Nursing home	30	0	27/11/2017	P-P	Norovirus

Month	HSE area	Location	No. ill *	No. Hosp.	Date Onset	Suspect mode of transmission	Disease
Dec	MW	Nursing home	8	-	14/12/2017	P-P	Astrovirus
Dec	NW	Comm. Hosp/Long-stay unit	5	-	14/12/2017	P-P	AIG
Dec	NW	Comm. Hosp/Long-stay unit	5	-	13/12/2017	P-P	AIG
Dec	NW	Comm. Hosp/Long-stay unit	8	-	17/12/2017	P-P	AIG
Dec	S	Residential institution	5	0	08/12/2017	P-P	AIG
Dec	SE	Nursing home	12	-	21/12/2017	Unknown	Norovirus
Dec	S	Comm. Hosp/Long-stay unit	9	0	11/12/2017	Not Specified	Norovirus
Dec	S	Hospital	-	-	-	P-P	AIG
Dec	MW	Comm. Hosp/Long-stay unit	4	-	23/12/2017	P-P	AIG
Dec	S	Comm. Hosp/Long-stay unit	17	0	25/12/2017	Not Specified	AIG
Dec	S	Comm. Hosp/Long-stay unit	47	0	27/12/2017	Not Specified	AIG
Dec	SE	Hospital	9	-	26/12/2017	Not Specified	Norovirus

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, 2017**

Month	HSE area	Location	No. ill *	No. Hosp.	Date Onset	Suspect mode of transmission	Disease
Oct	S	Private house	2	2	18/09/2017	Not Specified	Cryptosporidiosis
Oct	S	Private house	2	0	09/09/2017	P-P & Animal	VTEC
Oct	W	Private house	2	0	06/09/2017	P-P	VTEC
Oct	MW	Private house	1	-	14/09/2017	P-P & WB	VTEC
Oct	E	Private house	2	0	13/09/2017	P-P	VTEC
Oct	M	Private house	2	-	-	Unknown	Hepatitis A virus
Oct	M	Private house	2	0	01/10/2017	Unknown	VTEC
Oct	W	Extended family	1	-	14/09/2017	P-P	VTEC
Oct	M	Private house	4	2	02/10/2017	Unknown	VTEC
Oct	M	Travel related	1	0	-	FB & WB	VTEC
Oct	MW	Private house	3	0	12/09/2017	P-P	Salmonellosis
Oct	MW	Not Specified	-	-	-	P-P	VTEC
Oct	W	Private house	3	-	23/08/2017	P-P	VTEC
Oct	E	Private house	2	-	07/10/2017	Unknown	Hepatitis A virus
Oct	M	Private house	1	1	14/10/2017	Unknown	VTEC
Oct	NE	Private house	2	-	06/10/2017	WB	VTEC
Oct	W	Private house	2	0	22/09/2017	P-P	Giardiasis
Oct	M	Private house	1	1	20/01/2017	Unknown	VTEC
Oct	SE	Private house	2	-	26/09/2017	P-P	Cryptosporidiosis
Oct	S	Private house	3	-	14/10/2017	Unknown	VTEC
Nov	M	Private house	2	-	27/10/2017	Unknown	VTEC
Nov	M	Private house	1	1	26/10/2017	Unknown	VTEC
Nov	MW	Private house	2	1	01/10/2017	P-P	VTEC
Nov	M	Private house	3	2	25/10/2017	Unknown	VTEC
Nov	M	Private house	2	-	11/10/2017	Unknown	Cryptosporidiosis
Nov	M	Private house	1	0	27/10/2017	Unknown	VTEC
Nov	M	Private house	1	1	30/10/2017	Unknown	VTEC
Nov	W	Private house	1	-	27/10/2017	WB	VTEC

Nov	M	Private house	1	1	06/11/2017	Unknown	VTEC
Nov	NE	Private house	3	-	03/11/2017	P-P & FB	Shigellosis
Nov	SE	Private house	3	2	30/10/2017	Unknown	VTEC
Nov	SE	Private house	3	0	25/10/2017	Unknown	Salmonellosis
Nov	S	Private house	2	-	03/11/2017	Unknown	VTEC
Nov	MW	Private house	-	-	30/10/2017	P-P	VTEC
Nov	E	Private house	2	-	09/11/2017	Unknown	Cryptosporidiosis
Nov	S	Private house	2	-	01/10/2017	Unknown	VTEC
Nov	E	Private house	2	1	27/10/2017	Unknown	Shigellosis
Dec	SE	Private house	2	0	24/10/2017	Unknown	VTEC
Dec	W	Private house	5	3	14/11/2017	P-P	VTEC
Dec	M	Private house	4	0	25/11/2017	Unknown	VTEC
Dec	SE	Private house	3	1	21/11/2017	Unknown	VTEC
Dec	W	Private house	2	0	01/12/2017	P-P	AIG
Dec	MW	Private house	-	-	25/11/2017	WB	VTEC
Dec	MW	Private house	1	1	04/11/2017	P-P	VTEC
Dec	MW	Private house	1	0	24/11/2017	P-P	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, 2017**

Month	HSE area	Type of outbreak	Location	No. ill *	No. Hosp.	Date Onset	Suspect mode of transmission	Organism
Oct	NW	General	Comm. Hosp/Long-stay unit	8	1	06/10/2017	P-P & AB	Acute respiratory infection
Oct	S	General	Other	5	2	03/10/2017	P-P	Influenza
Oct	S	General	Hospital	-	-	-	P-P	VRE
Oct	E	General	Community outbreak	16	3	07/10/2017	P-P & AB	Measles
Oct	NW	Family	Private house	4	1	04/10/2017	P-P & AB	Influenza
Oct	NE	Family	Private house	6	2	20/10/2017	P-P & AB	Measles
Oct	NW	General	Other	2	2	-	P-P	RSV
Nov	MW	General	Childcare facility	19	0	29/10/2017	P-P	Suspected varicella
Nov	W	General	Hospital	21 pts colonised 1 infected	-	-	Unknown	CPE
Nov	W	General	Hospital	6 pts colonised	-	-	Unknown	CPE
Nov	W	General	Hospital	2 pts colonised	-	-	Unknown	CPE
Dec	NW	General	Comm. Hosp/Long-stay unit	3	-	-	Not Specified	Acute respiratory infection
Dec	M	General	Nursing home	41	0	10/12/2017	Unknown	Influenza
Dec	W	General	Nursing home	23	5	07/12/2017	P-P	Influenza
Dec	MW	General	Comm. Hosp/Long-stay unit	6	-	15/11/2017	AB	RSV
Dec	S	Family	Extended family	2	-	08/11/2017	P-P	Pertussis
Dec	SE	General	Hospital	5 pts colonised	-	-	Unknown	CPE
Dec	S	General	Comm. Hosp/Long-stay unit	7	0	12/12/2017	P-P	Acute respiratory infection
Dec	E	General	Hospital	3	3	06/12/2017	P-P & AB	Influenza
Dec	E	General	Nursing home	24	0	08/12/2017	P-P & AB	Influenza
Dec	E	General	Hospital	3	-	06/12/2017	AB	Influenza
Dec	E	General	Nursing home	37	-	06/12/2017	AB	Influenza

Month	HSE area	Type of outbreak	Location	No. ill *	No. Hosp.	Date Onset	Suspect mode of transmission	Organism
Dec	NE	General	Hotel	2	1	26/11/2017	P-P	Measles
Dec	E	General	Comm. Hosp/Long-stay unit	13	13	01/12/2017	P-P & AB	Influenza
Dec	E	General	Hospital	5	-	-	Unknown	ESBL e.coli
Dec	NE	Family	Private house	3	-	14/11/2017	P-P	Pertussis
Dec	SE	General	Hospital	6 pts colonised	-	-	Unknown	CPE
Dec	W	General	School	18	-	01/12/2017	P-P	Influenza
Dec	NE	General	Nursing home	7	1	24/12/2017	P-P	Influenza
Dec	NW	General	Comm. Hosp/Long-stay unit	15	4	22/12/2017	P-P & AB	Influenza
Dec	S	General	Comm. Hosp/Long-stay unit	7	3	24/12/2017	P-P	Influenza

P-P denotes Person-to-Person transmission, WB denotes waterborne; AB denotes airborne; NK denotes unknown; CPE denotes Carbapenem-resistant Enterobacteriaceae; Pts denotes patients; 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 1<sup>st</sup> 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 2017. There were 54 general and 45 family IID outbreaks reported during this period, resulting in at least 727 people being ill.

Norovirus (n=25) was responsible for the most general outbreaks of IID (46%), followed by Acute infectious gastroenteritis (n=17).

The most common cause of family outbreaks of IID was VTEC (n=33) [73%]. Other pathogens responsible for family outbreaks in Q4 2017 were AIG, cryptosporidiosis, giardiasis, hepatitis A, rotavirus, salmonellosis and shigellosis (Table 2).

Thirty-one general IID outbreaks were transmitted person-to-person/person-to-person & airborne (57%). Forty-five general IID outbreaks (83%) were reported to have occurred in healthcare settings, i.e. hospitals or residential institutions, during this period.

There were thirty-one non-IID outbreaks reported during Q4 2017 (Table 3). The most common cause of non IID outbreaks was during this period was influenza (n=13). The majority of influenza outbreaks reported in Q4 2017 occurred in healthcare settings.

Table 4 outlines the outbreak rate per HSE-area for outbreaks notified during Q4 2017.

**Table 4. Number of infectious disease outbreaks by HSE Area, Q4 2017**

HSE Area	No. of outbreaks	Rate per 100,000 population
E	20	1.0
M	20	7.0
MW	19	5.0
NE	11	2.0
NW	9	3.0
SE	14	3.0
S	21	3.0
W	14	3.0
<b>Total</b>	<b>128</b>	<b>3.0</b>



## 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 2017 is shown in Table 5.

**Table 5. Infectious intestinal, zoonotic and vectorborne disease notifications Q4, 2017 by HSE-Area**

Infectious Intestinal Disease	E	M	MW	NE	NW	SE	S	W	Total
<i>Bacillus cereus</i> foodborne infection/intoxication	~	~	~	~	~	~	~	~	1
Botulism	0	0	0	0	0	0	0	0	0
<i>Campylobacter</i> infection <sup>2</sup>	243	30	47	42	18	80	98	59	617
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	17	14	19	3	2	14	16	7	92
Giardiasis	19	0	1	0	0	14	5	11	50
Listeriosis	3	0	0	0	0	0	1	0	4
Noroviral infection <sup>a1</sup>	197	8	31	24	3	5	27	4	299
Paratyphoid	0	0	0	0	0	0	0	0	0
Rotavirus infection <sup>b1</sup>	39	4	3	4	1	15	17	9	92
Salmonellosis	23	6	10	4	3	12	9	4	71
Shigellosis	25	0	1	4	0	2	3	2	37
Staphylococcal food poisoning	0	0	0	0	0	0	0	0	0
Typhoid	~	~	~	~	~	~	~	~	3
Verotoxigenic <i>Escherichia coli</i> infection	27	43	35	21	3	34	27	28	217
Yersiniosis	~	~	~	~	~	~	~	~	1
<b>Zoonotic Disease</b>									
Anthrax	0	0	0	0	0	0	0	0	0
Brucellosis	~	~	~	~	~	~	~	~	2
Echinococcosis	0	0	0	0	0	0	0	0	0
Leptospirosis	3	1	2	0	0	1	0	0	7
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	1	0	0	0	0	0	0	2	3
Trichinosis	0	0	0	0	0	0	0	0	0
<b>Vectorborne Disease</b>									
Chikungunya disease	0	0	0	0	0	0	0	0	0
Dengue	2	0	0	0	0	0	1	0	3
Lyme disease (neuroborreliosis)	1	1	0	0	0	0	0	0	2
Malaria	10	0	0	3	0	3	3	0	19
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	2	0	0	0	0	0	0	0	2

<sup>1</sup> Between March 2013 and July 2017, norovirus and 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.

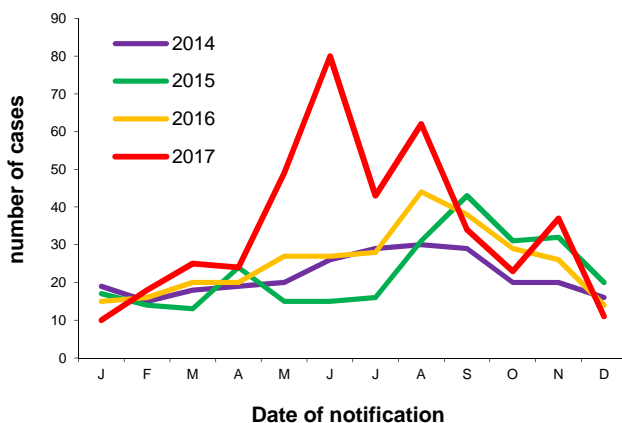
<sup>2</sup> From August 2017, campylobacter notifications from HSE-East re based on laboratory testing results rather than patient episodes. Notifications from HSE-E may also refer to area of laboratory testing rather than area of patient residence.

## 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 third quarter of 2017. Comparison of trends with previous years is shown in Figure 1.

**Table 6. Salmonellosis notifications by HSE-Area and month, Q4 2017**

Month	E	M	MW	NE	NW	SE	S	W	Total
Oct	5	2	7	0	1	2	5	1	23
Nov	15	3	3	3	2	6	3	2	37
Dec	3	1	0	1	0	4	1	1	11
<b>Total</b>	<b>23</b>	<b>6</b>	<b>10</b>	<b>4</b>	<b>3</b>	<b>12</b>	<b>9</b>	<b>4</b>	<b>71</b>



**Figure 1. Seasonal distribution of human salmonellosis notifications, 2014 to end Q4 2017**

Table 7 shows the serotypes for the *Salmonella* isolates typed by the NSSLRL in the fourth quarter of 2017 by HSE area (n=74). The commonest human serotypes reported this quarter were *S. Typhimurium*<sup>†</sup> (n=31, 42%) and *S. Enteritidis* (n=18).

Table 8 shows the serotype distribution of confirmed *Salmonella* notifications by travel status this quarter among salmonellosis notifications on CIDR. 25% (n=18) were travel-associated, 48% (n=34) were indigenous and for 19 cases, the country of infection was unknown/not specified.

<sup>†</sup>includes 15 cases of monophasic *S. Typhimurium* 4,5,12:i:-

### Outbreaks of salmonellosis

There were two family and two general outbreaks of salmonellosis notified in Q4 2017. Both general outbreaks were travel related and comprised of cases from across a number of HSE areas (Tables 1 & 2).

**Table 7. Serotypes of human *Salmonella* isolates referred to NSSLRL Q4 2017**

Serotype	E	M	MW	NE	NW	SE	S	W	Total
4,[5],12:i:-	2	1	4	2	2	1	2	1	15
Agama	1	0	0	0	0	0	0	0	1
Agbeni	0	1	0	0	0	0	0	0	1
Brandenburg	0	0	0	0	0	0	1	0	1
Bredeney	1	0	0	0	0	1	0	0	2
Corvallis	1	0	1	0	0	0	0	0	2
Enteritidis	6	3	2	0	0	4	1	2	18
Essen	0	0	0	0	0	1	0	0	1
Infantis	0	0	0	0	0	3	0	0	3
Java	1	0	0	0	0	0	0	0	1
Mbandaka	1	0	0	0	0	0	0	0	1
Montevideo	0	0	0	0	0	0	1	0	1
Muenchen	0	0	0	0	0	0	1	0	1
Oranienburg	0	0	0	0	0	0	1	0	1
Stanley	2	0	0	0	0	0	0	0	2
Typhi	2	1	0	0	0	0	1	0	4
Typhimurium	7	0	3	1	0	2	2	1	16
Unnamed	0	0	0	0	0	2	0	0	2
Weltevreden	0	0	0	0	0	0	0	1	1
<b>Total</b>	<b>24</b>	<b>6</b>	<b>10</b>	<b>3</b>	<b>2</b>	<b>14</b>	<b>10</b>	<b>5</b>	<b>74</b>

Data Source: NSSLRL

**Table 8. Confirmed *Salmonella* notifications by serotype and travel status, Q4 2017 [n(%)]**

Serotype	Indigenous	Travel-associated	Unk/not specified	Total
<i>S. Enteritidis</i>	4 (9%)	6 (33%)	6 (37%)	16 (23%)
<i>S. Typhimurium</i> *	17 (50%)	6 (33%)	5 (26%)	28 (39%)
Other	13 (38%)	6 (28%)	3 (21%)	22 (31%)
<i>Salmonella</i> spp	1 (3%)	1 (6%)	3 (16%)	5 (7%)
<b>Total</b>	<b>35 (100%)</b>	<b>19 (100%)</b>	<b>17 (100%)</b>	<b>71 (100%)</b>

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 were three cases of typhoid reported to CIDR in Q4 2017, all of which were associated with travel to the Indian Sub-Continent. There no cases of paratyphoid reported this quarter.

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

There were no outbreaks of typhoid or paratyphoid notified in Q4 2017.



## VEROTOXIGENIC *E. COLI* (VTEC)

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

Two hundred and seventeen cases of VTEC were notified this quarter, the regional distribution of which is shown in Table 9. This compares with 156 VTEC cases notified in Q4 2016 and 152 in Q4 2015 (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 2017.

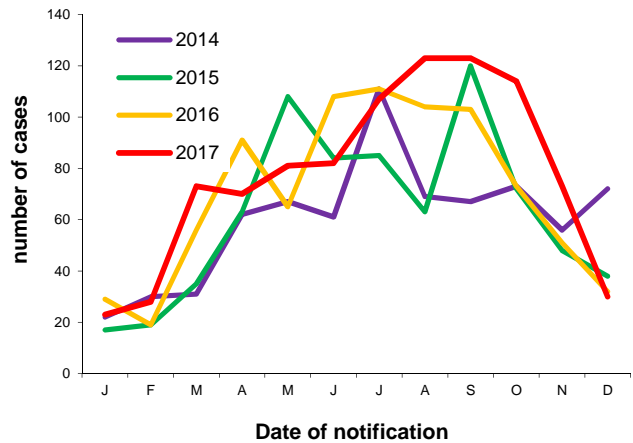
**Table 9. Number VTEC notified by case classification and HSE-area, Q4 2017**

Case classification	E	M	MW	NE	NW	SE	S	W	Total
Confirmed	26	25	28	21	2	30	26	26	184
Probable	0	18	7	0	1	4	1	2	33
Possible	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>26</b>	<b>43</b>	<b>35</b>	<b>21</b>	<b>3</b>	<b>34</b>	<b>27</b>	<b>28</b>	<b>217</b>

**Table 10. VTEC notified by serogroup and month, Q4 2017**

Month	O157	O26	Other	Total
Oct	39	15	60	114
Nov	30	8	35	73
Dec	5	4	21	30
<b>Total</b>	<b>74</b>	<b>27</b>	<b>116</b>	<b>217</b>

Nine VTEC cases notified this quarter were reported as having developed HUS – four O157, one O26, one O111, one O145 and two ungroupable strains.



**Figure 2. Seasonal distribution of VTEC cases notified 2014 to end Q4 2017**

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 2017.

**Table 11. Verotoxin typing profiles of *E. coli* referred to the HSE DML Public Health Laboratory, Cherry Orchard Hospital in Q4 2017**

Serogroup	vt1	vt2	vt1+vt2	Not spec.	Total
O157	0	44	27	3	74
O26	8	2	16	1	27
Other	33	44	28	9	114
<b>Total</b>	<b>41</b>	<b>90</b>	<b>71</b>	<b>13</b>	<b>215*</b>

Data Source: PHL Cherry Orchard

\*excludes 2 cases reported on the basis of epi-link as no isolates

### Outbreaks of VTEC infection

During this quarter, two general and thirty-three family outbreaks of VTEC infection were reported (Tables 1 & 2).

## CAMPYLOBACTER

Human campylobacteriosis became a notifiable disease on January 1<sup>st</sup> 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 2017 are shown in Table 12. There were 617 cases of campylobacteriosis notified in Q4 2017 compared to 489 in the same period in 2016 and 477 in Q4 2015 (Figure 3).

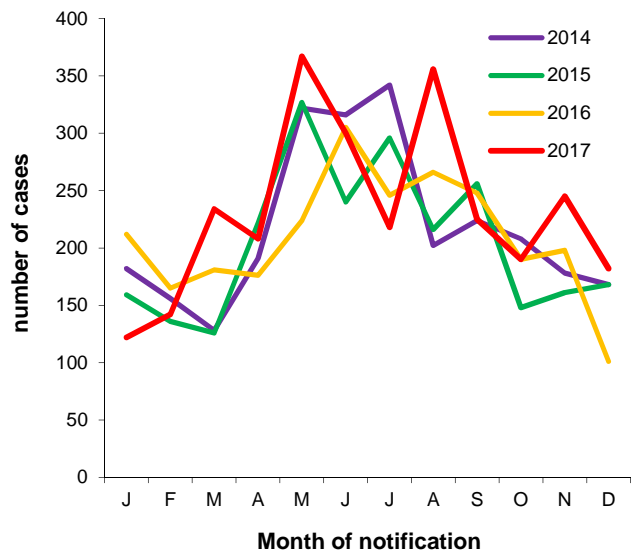
From August 2017, campylobacter notifications from HSE-East are based on laboratory testing results rather than patient episodes. Notifications from HSE-E may also refer to area of laboratory testing rather than area of patient residence.

**Table 12. *Campylobacter* notifications by HSE-Area and month, Q4 2017**

Month	E	M	MW	NE	NW	SE	S	W	Total
Oct	66	11	12	14	3	27	34	23	190
Nov	101	13	13	17	9	28	38	26	245
Dec	76	6	22	11	6	25	26	10	182
<b>Total</b>	<b>243</b>	<b>30</b>	<b>47</b>	<b>42</b>	<b>18</b>	<b>80</b>	<b>98</b>	<b>59</b>	<b>617</b>

### Outbreaks of *Campylobacter* infection

There were no outbreaks of campylobacteriosis reported in Q4 2017 (Tables 1 and 2).



**Figure 3. Seasonal distribution of *Campylobacter* notifications 2014 to end Q4 2017**

## CRYPTOSPORIDIUM

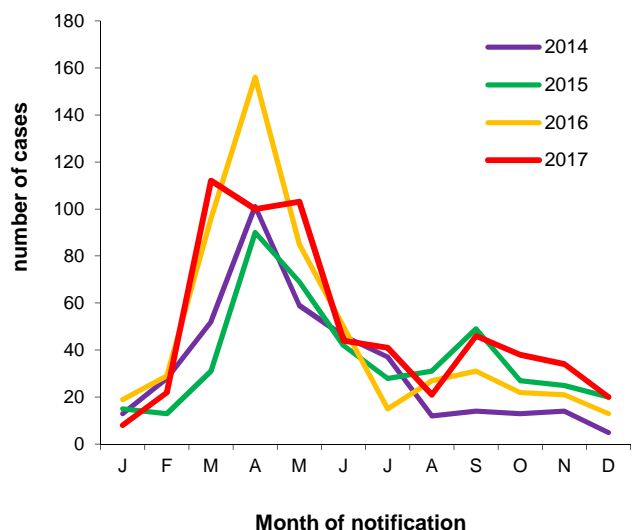
Human cryptosporidiosis became a notifiable disease on January 1<sup>st</sup> 2004. Prior to this, cryptosporidiosis was notifiable in Ireland only in young children under the category 'Gastroenteritis in Children Under 2'. In Q4 2017, 92 cases of cryptosporidiosis were notified (Table 13), compared to 56 in the same period in 2016 and 72 in Q4 2015 (Figure 4).

**Table 13. *Cryptosporidiosis* notifications by HSE-Area and month, Q4 2017**

Month	E	M	MW	NE	NW	SE	S	W	Total
Oct	7	4	6	2	0	8	9	2	38
Nov	8	7	6	1	1	4	4	3	34
Dec	2	3	7	0	1	2	3	2	20
<b>Total</b>	<b>17</b>	<b>14</b>	<b>19</b>	<b>3</b>	<b>2</b>	<b>14</b>	<b>16</b>	<b>7</b>	<b>92</b>

### Outbreaks of cryptosporidiosis

There was one general and four family outbreaks of cryptosporidiosis reported in quarter 4 2017 (Tables 1 and 2).



**Figure 4. Seasonal distribution of *Cryptosporidium* notifications 2014 to end Q4 2017**

## 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 299 cases notified in the fourth quarter of 2017 (Table 14). These data are certainly an under-ascertainment of the true burden of disease due to this pathogen.

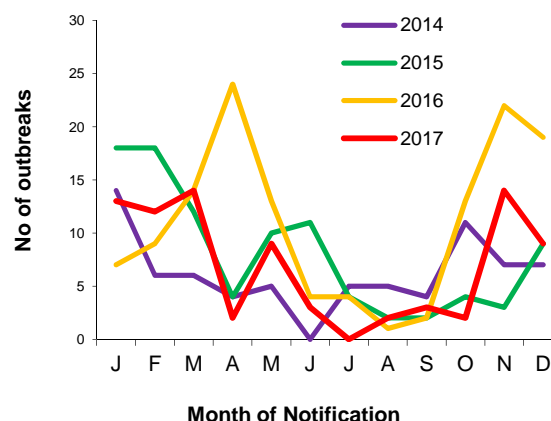
**Table 14. Norovirus notifications by HSE-Area and month, Q4 2017**

Month	E	M	MW	NE	NW	SE	S	W	Total
Oct	54	1	2	10	2	3	5	1	78
Nov	75	4	19	7	1	0	9	3	118
Dec	68	3	10	7	0	2	13	0	103
<b>Total</b>	<b>197</b>	<b>8</b>	<b>31</b>	<b>24</b>	<b>3</b>	<b>5</b>	<b>27</b>	<b>4</b>	<b>299</b>

### Norovirus outbreaks

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

gastroenteritis in Ireland. In the fourth quarter of 2017, there were twenty-five outbreaks confirmed as being caused by this virus, involving at least 385 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, 2014 to end Q4 2017**

## SHIGELLA

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

During Q3 2017, thirty-seven cases of shigellosis were notified (Table 5). This compares with twenty-six cases notified in Q4 2016 and forty-one in Q4 2015.

Ten cases were travel related and the country of infection was reported as Ireland for a further nine cases. The country of infection was reported as unknown/not specified for the remaining eighteen cases.

**Table 15: Species and serotype distribution of Q4 2017 human *Shigella* isolates referred to the NSSLRL.**

Serotype	Number of isolates
<i>Shigella boydii</i>	1
<i>Shigella dysenteriae</i>	1
<i>Shigella flexneri</i> 1b	3
<i>Shigella flexneri</i> 1c	1
<i>Shigella flexneri</i> 2a	3
<i>Shigella flexneri</i> 2b	2
<i>Shigella flexneri</i> 3b	2
<i>Shigella flexneri</i> 4	1
<i>Shigella sonnei</i>	14
<b>Total</b>	<b>28</b>

Data Source: NSSLRL

### Outbreaks of shigellosis

There were two family outbreaks of shigellosis notified in Q4 2017 (Table 2).

## GIARDIA

Human giardiasis became a notifiable disease on January 1<sup>st</sup> 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, 2017, fifty cases of giardiasis were notified (Table 5); this compares with 45 cases notified in Q4 2016 and 52 in Q4 2015.

Two cases were reported to have acquired their illness abroad. Country of infection was reported as Ireland for fourteen cases and ‘not specified’ or ‘unknown’ for the remaining thirty-four cases.

### Outbreaks of giardiasis

There was one family outbreak of giardiasis notified in Q4 2017 (Table 2).

## LISTERIA

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

There were four adult cases of listeriosis notified in Q4 2017, compared to one case in quarter 4 2016 and five in quarter 4 2015.

### Outbreaks of listeriosis

There were no outbreaks of listeriosis notified in Q4 2017 (Table 2).

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

**Table 16: Serotypes of Q4 2017 human *Listeria* isolates referred to the NSSLRL**

Serotype	Number of isolates
1/2a	1

Data Source: NSSLRL

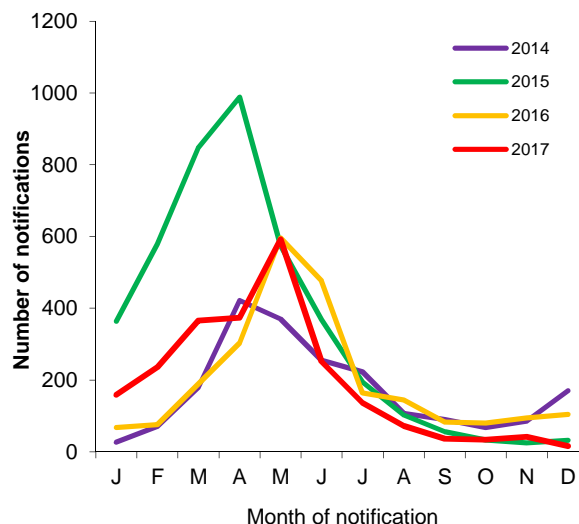
## ROTAVIRUS INFECTION

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 2017 are shown in Table 17 and Figure 6.

**Table 17. Rotavirus infection by HSE-Area and month, Q4 2017**

Month	E	M	MW	NE	NW	SE	S	W	Total
Oct	12	2	0	3	0	7	7	3	34
Nov	20	2	2	1	1	7	5	4	42
Dec	7	0	1	0	0	1	5	2	16
<b>Total</b>	<b>39</b>	<b>4</b>	<b>3</b>	<b>4</b>	<b>1</b>	<b>15</b>	<b>17</b>	<b>9</b>	<b>92</b>



**Figure 6. Seasonal distribution of rotavirus notifications, 2014 to end Q4 2017**

### Outbreaks of rotavirus

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

## FOODBORNE INTOXICATIONS

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

were notified under the category of 'Food Poisoning (bacterial other than Salmonella)'.

There was one case of *Bacillus cereus* foodborne infection/intoxication reported in Q4 2017.

## NON-IID ZONOTIC DISEASES

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Non-IID zoonoses now notifiable include: anthrax, brucellosis, echinococcosis, leptospirosis, plague, Q fever, toxoplasmosis, trichinosis and rabies. The Q4 2017 notifications of these zoonotic diseases are reported by HSE-Area in Table 5.

Three cases of toxoplasmosis were notified in this quarter. This compares with three cases notified in the same period in 2016 and six cases in Q4 2015.

There were seven cases of leptospirosis notified in Q4 2017. This compares with sixteen cases in Q4 2016 and six cases in Q4 2015.

Three leptospirosis cases this quarter are believed to have acquired their infection occupationally, one is believed to have been exposed during recreational/leisure activity, one case cited accidental exposure while source of infection for the remaining two cases is not known.

There were two cases of brucellosis notified in Q4 2017. This compares with two cases in Q4 2016 and none in the same period for 2015.

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

## MALARIA

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Malaria has been a notifiable disease for many years. The Q4 2017 notifications are reported in Table 5 by HSE-Area.

Nineteen cases of malaria were notified in Q4 2017. This compares with seventeen cases reported in Q4 2016 and eighteen in Q4 2015.

Fifteen cases this quarter were reported as *P. falciparum*, one as *P. vivax* and two as *P. ovale*. There was no species identified for the remaining case.

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

Three cases cited 'visiting family in country of origin' as their reason for travel and one case was identified in a new entrant to Ireland. Travel information was not specified/unknown for the remaining fifteen cases this quarter.

## OTHER NOTIFIABLE VECTORBORNE DISEASES

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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 2017 notifications are reported in Table 5 by HSE-Area. There were two cases

of Lyme disease (neuroborreliosis) reported in Q4 2017.

There were two cases of Zika virus infection this quarter, both associated with travel to an affected area.

There were three cases of Dengue fever notified in Q4 2017. Country of infection was not specified for any of these cases.

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

**Health Protection Surveillance Centre**  
25-27 Middle Gardiner St, Dublin 1, Ireland  
[www.hpsc.ie](http://www.hpsc.ie)  
Tel: +353-1-8765300  
Fax: +353-1-8561299

**Report prepared by:**  
Ms Fiona Cloak  
Dr Patricia Garvey  
Ms. Sarah Jackson  
Dr Paul McKeown