Gastroenteric, Zoonotic and Vectorborne Diseases in Ireland: Quarterly report

Quarter 1, 2024

May 2024

Acknowledgements

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These slides were prepared by Niamh Lynch, Helen Byrne, Anthony Ortiz, Aoife Colgan, Patricia Garvey and Paul McKeown from the Gastroenteric, Zoonotic and Vectorborne Diseases team in HPSC.

Preventing Gastroenteritis and other Zoonotic diseases

See HPSC website for information on prevention of gastroenteritis: Gastroenteritis Fact Sheet

- Ensure that you regularly wash your hands with soap under warm running water and especially:
  - After using or cleaning the toilet
  - After attending to anyone with diarrhoea or vomiting or touching anything contaminated by diarrhoea or vomiting
  - After handling household and garden waste or rubbish (including nappies)
  - After touching or handling pets or other animals
  - On returning to the house having been working in the garden or on the farm
  - Before handling, preparing, serving, or consuming food or drink
- Cook meats and eggs thoroughly before consumption.
- Clean kitchen work surfaces and utensils with soap and water immediately after they have been in contact with raw meat.
- Wash fruit and vegetables thoroughly in clean water, especially those that will not be cooked further.

See HPSC website for travel advice for international travellers: Travel Health Fact Sheet

- When on holiday, you should take extra travel precautions with your and your family's health and ensure your travel vaccinations are up to date.

If anyone in your house is suffering from vomiting or diarrhoea, the toilet and other areas should be cleaned and disinfected after use. Anyone who is ill with diarrhoea or vomiting should stay off work/school until they have been symptom free for 48 hours.

Preventing Vectorborne diseases

See HPSC website for information on prevention of mosquito-borne diseases: Protect yourself against mosquitoes

- The best protection against mosquito-borne diseases is to protect yourself against their bites
- Avoid areas where mosquitoes live and breed, such as near standing or slow-moving water including rainwater collections, ponds, lakes and marshes
- Protect your skin from mosquito bites by wearing long sleeves, long trousers, closed shoes and hats
- Use bug spray/insect repellent and read the instructions on the label carefully before use. Your local pharmacist can advise you on the best product for your trip.
- To prevent malaria there are effective prophylactic medications that should be taken as prescribed

See HPSC website for information on prevention of tick-borne diseases: Prevent tick bites

- Protect yourself against bites as above
- Check skin, hair and warm skin folds (especially the neck and scalp of children) for ticks, after a day out
- Check for ticks and remove any from your pets/clothing/outdoor gear
- Remove any ticks and consult with a GP if symptoms develop

Additional Resources

Additional information on minimising the risk of foodborne illness:

- www.safefood.net/food-safety
- www.fsai.ie/consumer-advice/food-safety-and-hygiene

Additional information on minimising the risk of zoonotic infection:

- www.hpsc.ie/a-z/zoonotic/petsandotheranimals/

Additional information on minimising the risk of travel-associated infection:

- www.ireland.ie/en/dfa/overseas-travel/advice/
- www.who.int/travel-advice
- www.hse.ie/eng/health/immunisation/pubinfo/travelvacc/

Additional information on minimising the risk associated with sexual transmission of shigellosis:

- www.sexualwellbeing.ie/sexual-health/sexually-transmitted-infections/types-of-stis/shigella-in-gbmsm.html
- man2man.ie/shigella/

See Department of Foreign Affairs website for information on Zika virus in Thailand:

Since 2023, Thai authorities have reported a 300% increase in cases of Zika virus disease, with more than 800 cases identified last year. Zika virus is a mosquito-borne disease and can have serious health impacts on babies if contracted during pregnancy.

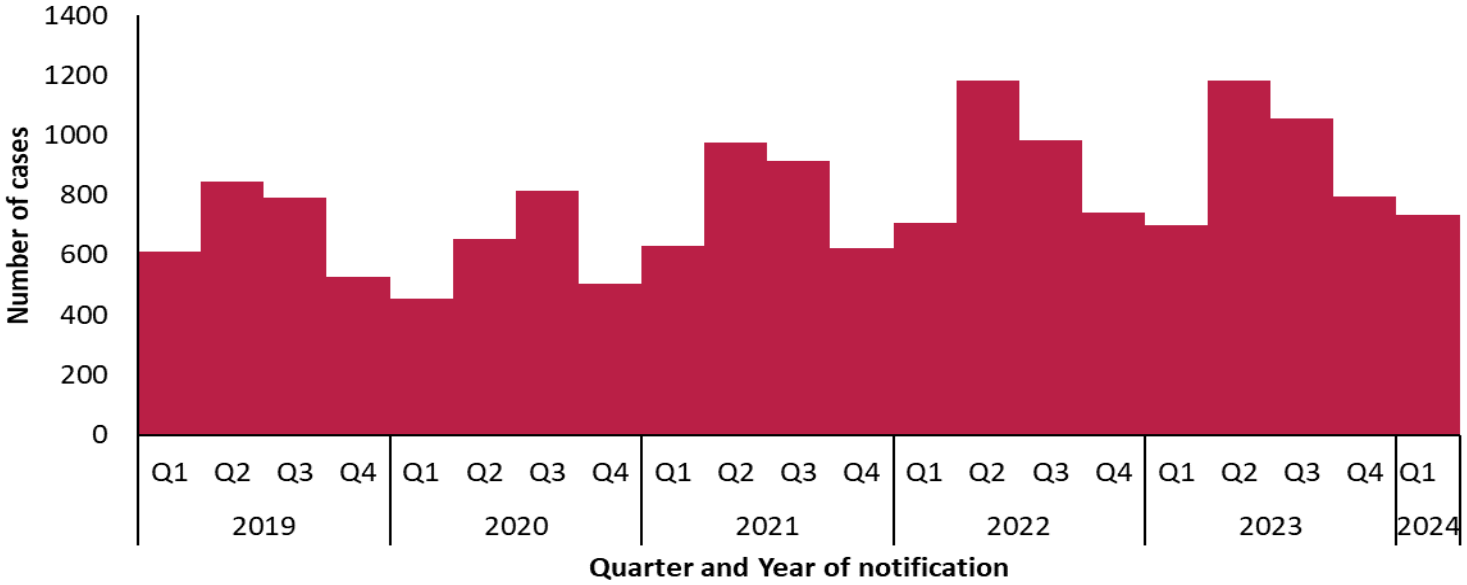
GZV diseases in Ireland summary, Q1 2024

Disease category	Disease	Q1 2023	Q1 2024	Increase/ Decrease	% Change
Bacterial IID infections	Campylobacter infection	700	733	33	5%
	Cholera	0	1	1	N/A
	Listeriosis	1	5	4	400%
	Paratyphoid	2	6	4	200%
	Salmonellosis	84	67	-17	-20%
	Shigellosis	45	47	2	4%
	Typhoid	8	6	-2	-25%
	Verotoxigenic Escherichia coli infection	131	116	-15	-11%
	Yersiniosis	7	10	3	43%
Viral IID infections	Noroviral infection	548	672	124	23%
	Rotavirus infection	70	126	56	80%
Foodborne Hepatitis	Hepatitis A	7	18	11	157%
	Hepatitis E	4	13	9	225%
Parasitic IID infections	Cryptosporidiosis	117	152	35	30%
	Giardiasis	76	92	16	21%
IID toxins	Clostridium perfringens (type A) food-borne disease	0	4	4	N/A
	Bacillus cereus food-borne infection/intoxication	0	0	0	0%
	Botulism	0	0	0	0%
	Staphylococcal food poisoning	0	0	0	0%

GZV diseases in Ireland summary, Q1 2024 continued

Disease category	Disease	Q1 2023	Q1 2024	Increase/ Decrease	% Change
Non-IID Zoonotic infections	Anthrax	0	0	0	0%
	Brucellosis	1	0	-1	-100%
	Echinococcosis	0	0	0	0%
	Leptospirosis	5	4	-1	-20%
	Plague	0	0	0	0%
	Q fever	0	1	1	N/A
	Rabies	0	0	0	0%
	Toxoplasmosis	6	5	-1	-17%
	Trichinosis	0	0	0	0%
Vectorborne Diseases	Chikungunya disease	0	0	0	0%
	Dengue fever	1	11	10	1000%
	Lyme disease	0	0	0	0%
	Malaria	10	11	1	10%
	Tularemia	0	0	0	0%
	Typhus	0	0	0	0%
	Viral encephalitis (TBE only)	0	0	0	0%
	West Nile fever	0	0	0	0%
	Yellow fever	0	0	0	0%
	Zika virus infection	0	0	0	0%
	Viral haemorrhagic fevers	0	0	0	0%

Campylobacter in Ireland, Q1 2024



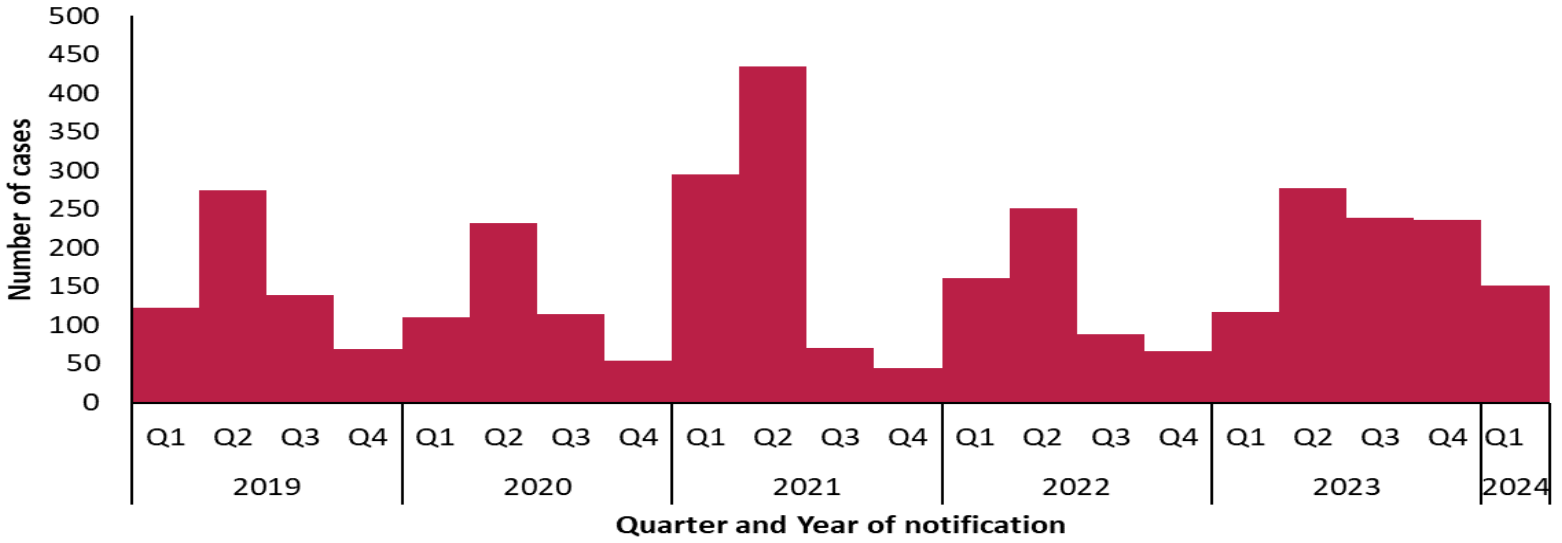
Type	Outbreaks (N)	Number ill	Range ill
Family	1	2	N/a

Species	Number of isolates	Proportion of sequenced isolates
Campylobacter jejuni	57	92%
Campylobacter coli	5	8%
Total	**62**	**100%%**

- 733 cases of Campylobacteriosis notified in Q1 2024, similar to Q1 2023
- One Campylobacter outbreak notified in Q1 2024. Lower than the number of outbreaks reported for the same time period in 2023 (n=4)
- 62 Campylobacter isolates were sequenced in the sentinel Campylobacter Reference Laboratory, representing approximately 8% of campylobacteriosis cases notified
- 92% of isolates sequenced were *C. jejuni*

Data source: Computerised Infectious Diseases Reporting (CIDR) system 22/04/2024 and Public Health Laboratory, Cherry Orchard 07/05/2024

Cryptosporidiosis in Ireland, Q1 2024



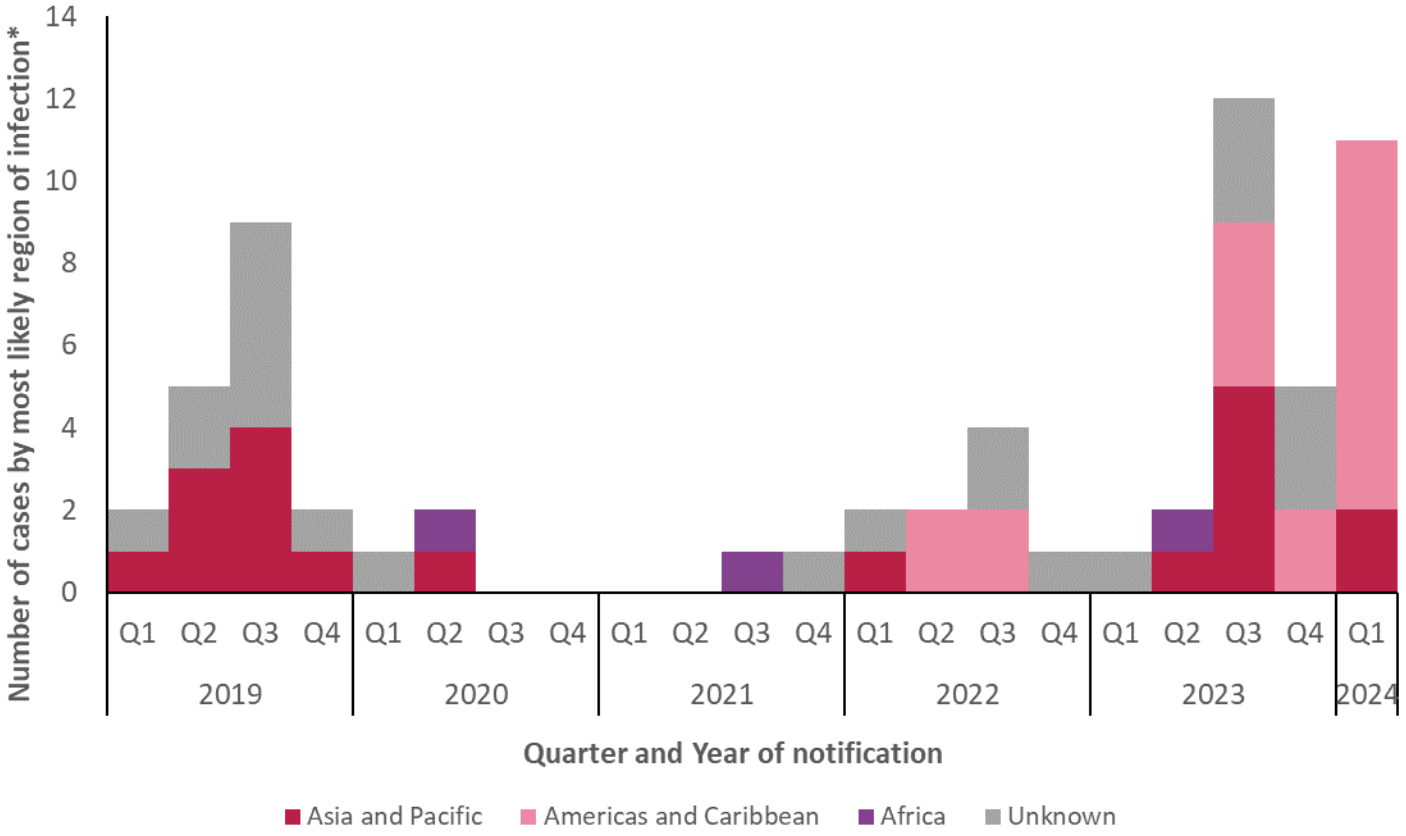
	N	% where known
Indigenous	142	96%
Travel-related	6	4%
Travel status not known	4	n/a
Total	**152**	

Type	Outbreaks (N)	Number ill	Median ill	Range ill
Family	12	29	2	2-4

- 152 cases of cryptosporidiosis notified in Q1 2024, higher than in Q1 2023 (n=117).
- 12 Cryptosporidiosis outbreaks notified in Q1 2024. Higher than the number of outbreaks reported for the same time period in 2023 (n=6)
- 96% of cases in Q1 2024 were reported as indigenous (where travel status was known).

Data source: Computerised Infectious Diseases Reporting (CIDR) system 22/04/2024

Dengue Fever in Ireland, Q1 2024



	Q1 2023	Q1 2024	% Change
Number of cases	1	11	+1000%
Number hospitalised	0	2	NaN

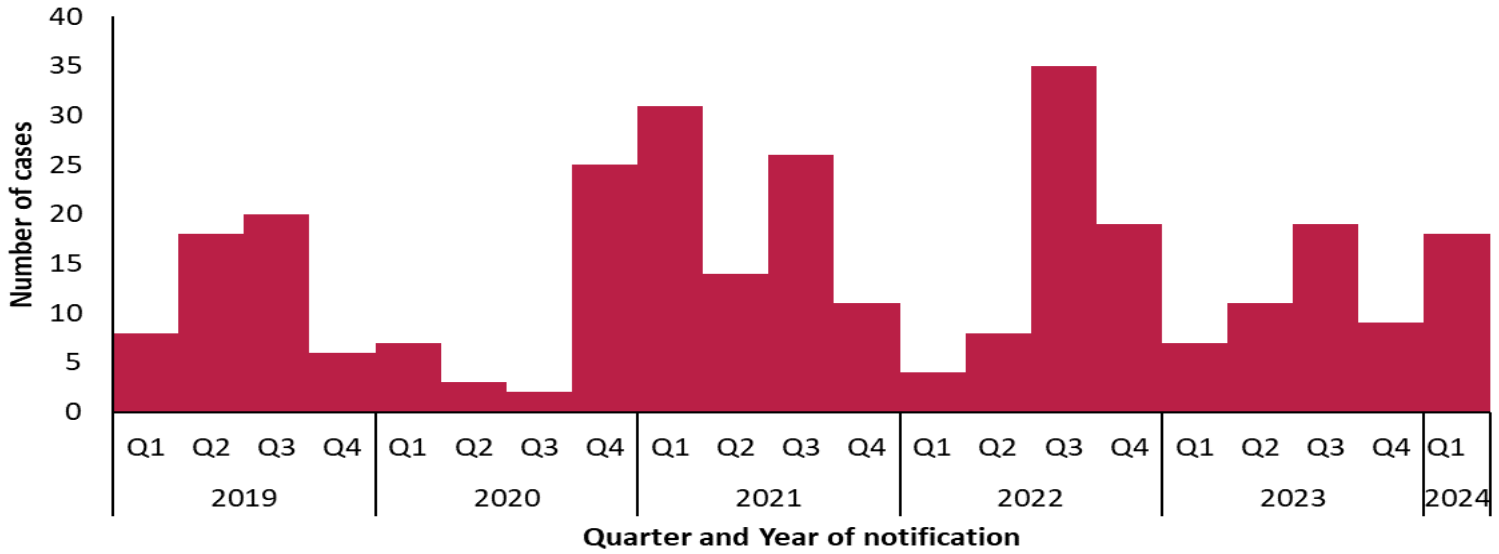
- There was an increase in Dengue Fever notifications in Q1 2024 with 11 cases compared to 1 in Q1 2023.
- Most cases notified in 2023 and Q1 2024, where travel history was known, returned from the Americas.
- This is likely connected to an ongoing outbreak of Dengue Fever that started in the second half of 2023.

*Likely region of infection is a composite variable using country of infection data as well as free text comments indicating travel to one or more countries where definitive country of infection could not be determined.

Data completeness related to countries of travel is low. Therefore, caution is advised when interpreting these data.

Data source: Computerised Infectious Diseases Reporting (CIDR) system 22/04/2024

Hepatitis A in Ireland, Q1 2024



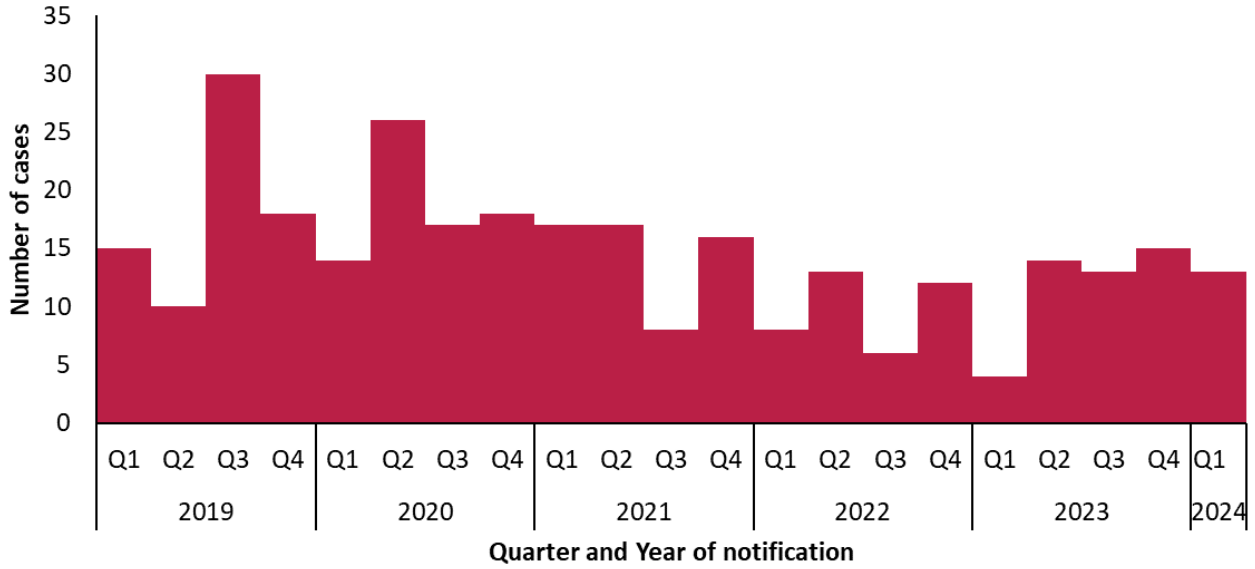
	N	% where known
Indigenous	7	58%
Travel-related	5	42%
Travel status not known	6	n/a
Total	**18**	

Type	Outbreaks (N)	Number ill	Median ill	Range ill
General	2	5	3	2-3

- 18 cases of Hepatitis A notified in Q1 2024, higher than in Q1 2023 (n=7).
- 2 Hepatitis A outbreaks notified in Q1 2024. Higher than the number of outbreaks reported for the same time period in 2023 (n=0)
- 58% of cases in Q1 2024 were reported as indigenous (where travel status was known) .

Data source: Computerised Infectious Diseases Reporting (CIDR) system 22/04/2024

Hepatitis E in Ireland, Q1 2024

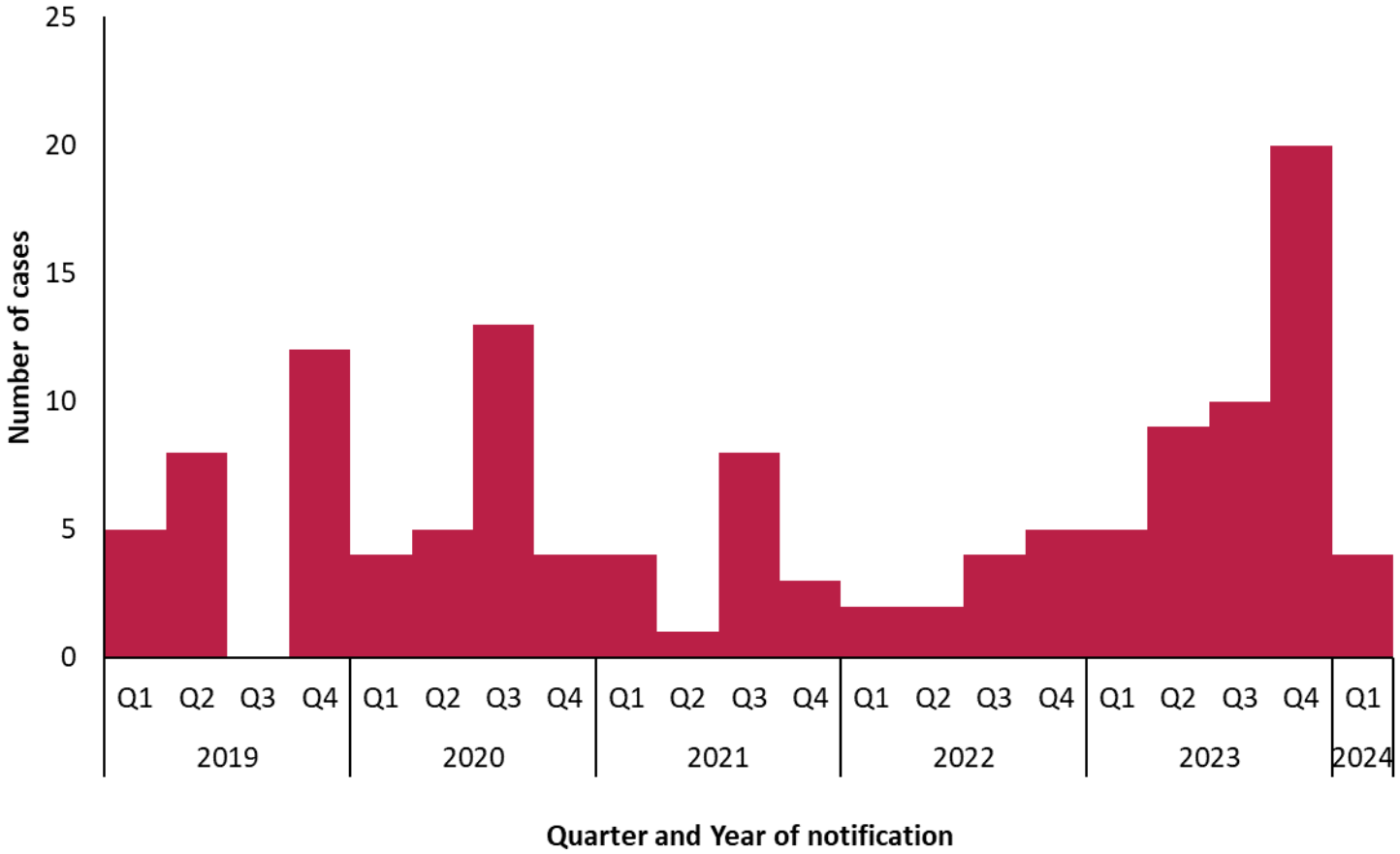


Country of Infection	N	% where known
Ireland	4	80%
Unknown	1	n/a
Not specified	8	n/a
Total	**13**	

- 13 cases of Hepatitis E notified in Q1 2024, higher than in Q1 2023 (n=4).
- No Hepatitis E outbreaks were reported in Q1 2024.
- Country of Infection (COI) was reported as Ireland for 80% of cases in Q1 2024 (where Country of Infection data were complete). COI was complete for 38% cases in Q1 2024.

Data source: Computerised Infectious Diseases Reporting (CIDR) system 22/04/2024

Leptospirosis in Ireland, Q1 2024

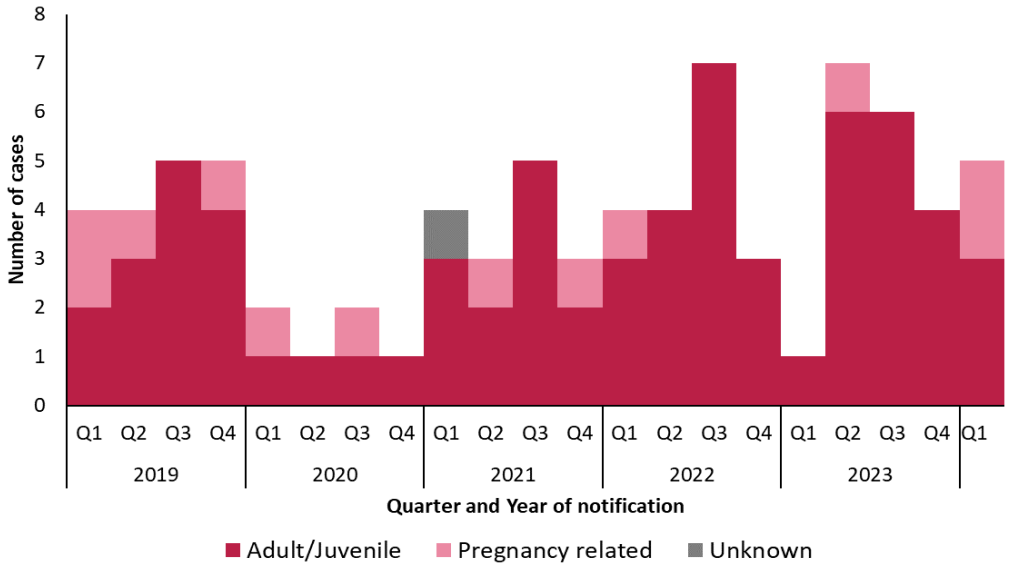


	Q1 2023	Q1 2024	% Change
Number of cases	4	5	+25%
Number hospitalised	3	3	0%

- There were 4 notified cases of leptospirosis in Q1 2024, similar to Q1 2023 (n=5) and a decrease from 20 in Q4 2023
- There were 44 notified cases of leptospirosis in 2023. Prior to 2023, the highest number of notifications in the last five years was 26 cases in 2020.

Data source: Computerised Infectious Diseases Reporting (CIDR) system 22/04/2024

Listeriosis in Ireland, Q1 2024



Adult/Juvenile case Principal Diagnosis	Number of cases
Meningitis	1
Not specified	2
Total	**3**

Pregnancy related case outcome	Number of cases
Still pregnant	1
Live birth	1
Total	**2**

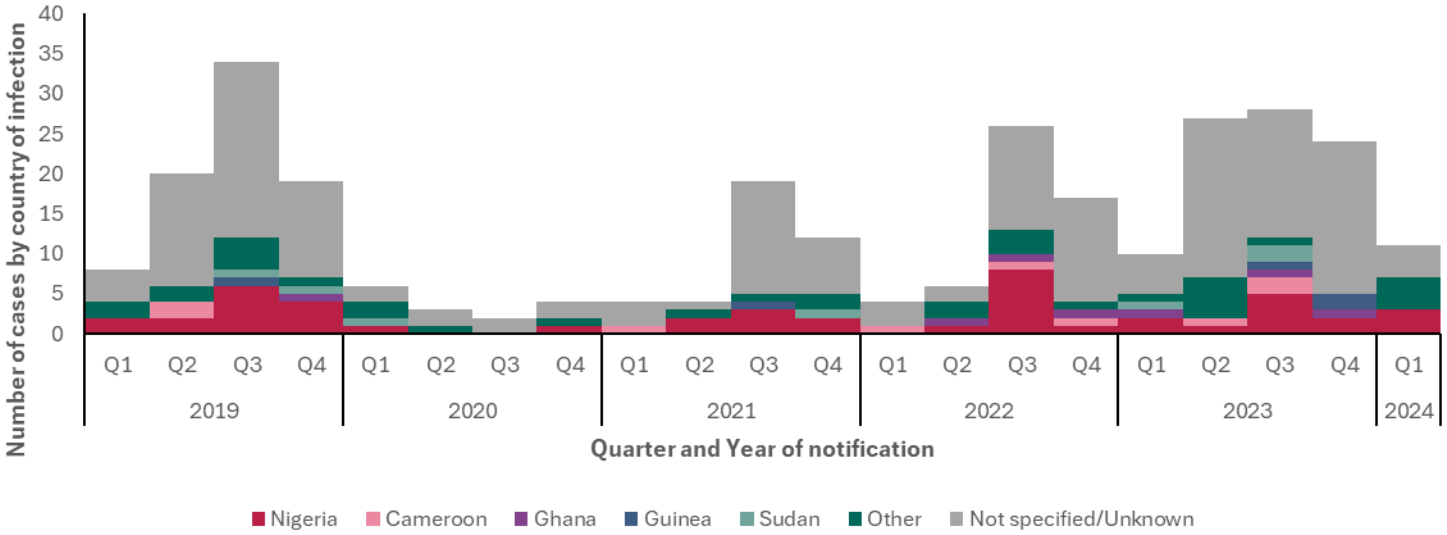
Serotype	Number of isolates
Listeria monocytogenes 1/2b	3
Listeria monocytogenes 4b	2
Listeria monocytogenes 1/2a	1
Total	**6**

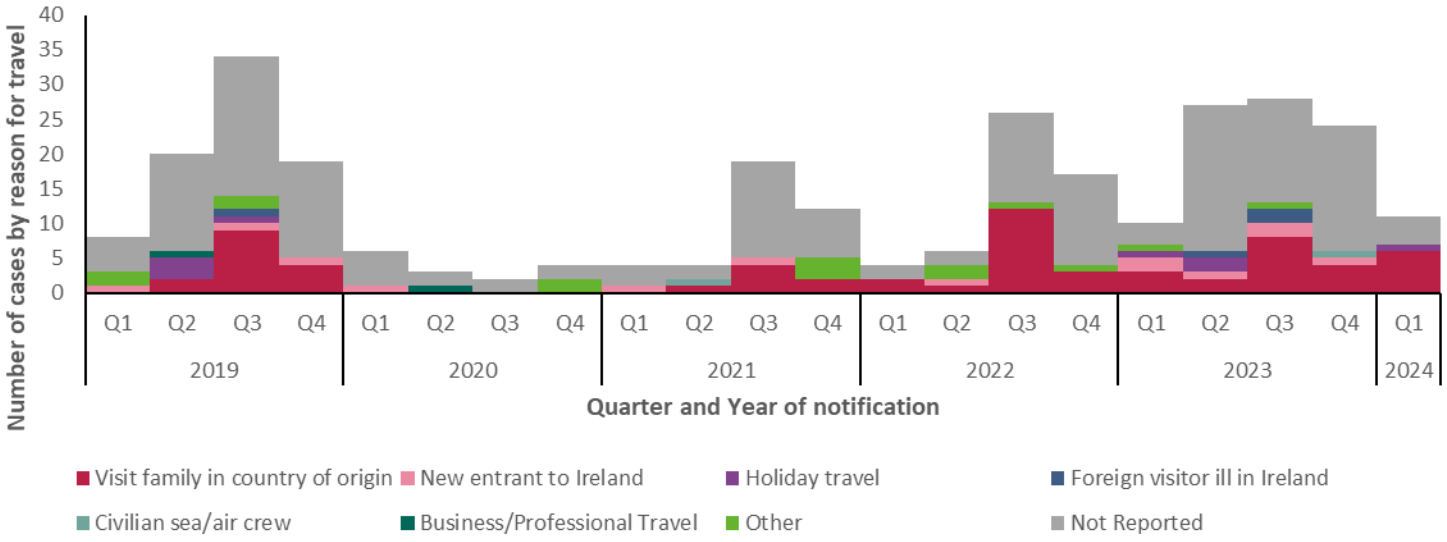
*The number of isolates sequenced in the NSSLRL may not match the number of cases notified, as dates are based on date received in the laboratory which may not align with notification date. Furthermore, additional isolates for mother/baby pairs may be sequenced in the NSSLRL but only the mother will be notified as a listeriosis case in line with the Irish case definition.

- Five cases of listeriosis notified in Q1 2024, increased from one case notified in Q1 2023
- Three cases were adult/juvenile cases and two were pregnancy related cases
- Six isolates of *Listeria monocytogenes* were sequenced in the NSSLRL*
- The most frequently seen serotype in Q1 2024 was 1/2b
- There were no outbreaks of listeriosis reported in Q1 2024

Data source: Computerised Infectious Diseases Reporting (CIDR) system 22/04/2024 and National Salmonella, Shigella and Listeria Reference Laboratory (NSSLRL)

Malaria in Ireland, Q1 2024





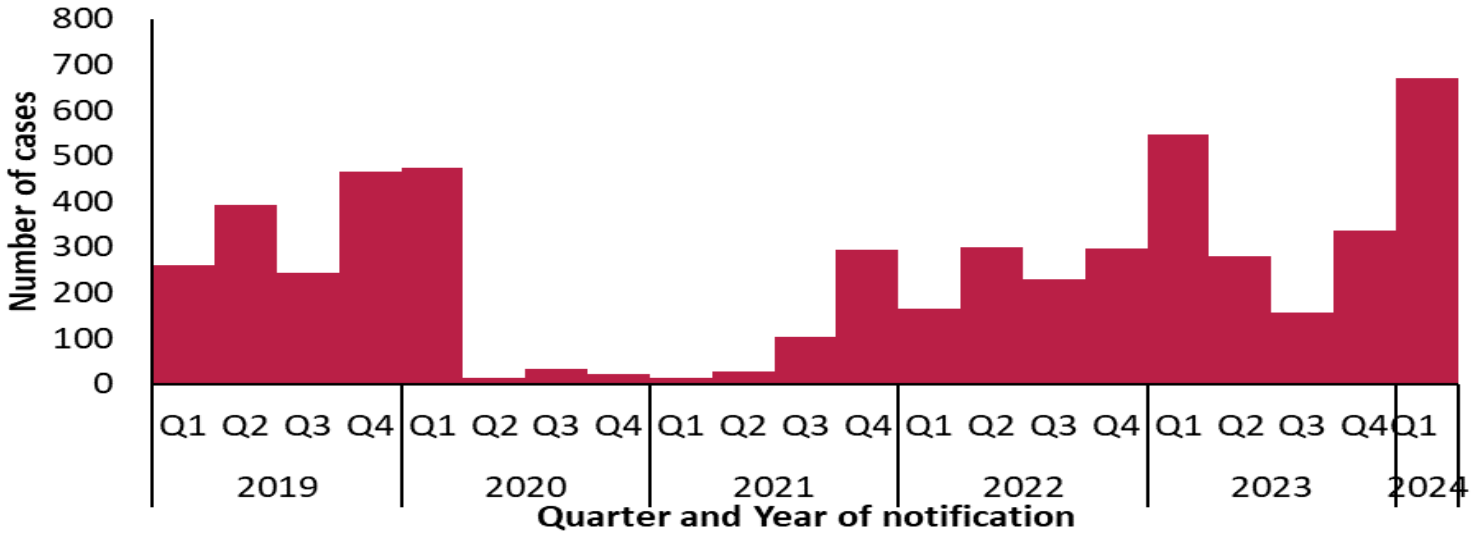
	Q1 2023	Q1 2024	% Change
Number of cases	10	11	+10%
Number hospitalised	3	3	0%

- 11 cases of malaria reported in Q1 2024 in Ireland. This is similar to Q1 2023 (n=10).
- Nigeria is the most commonly reported country of infection in Q1 2024 (27%), similar to Q1 2023 (20%).
- Visiting country of origin is the most commonly reported reason for travel in Q1 2024 (55%) compared to 30% in Q1 2023

*Data completeness for reason for travel and country of infection is low. Therefore, caution is advised when interpreting these data.

Data source: Computerised Infectious Diseases Reporting (CIDR) system 22/04/2024

Norovirus and Acute Infectious Gastroenteritis (AIG) in Ireland, Q1 2024

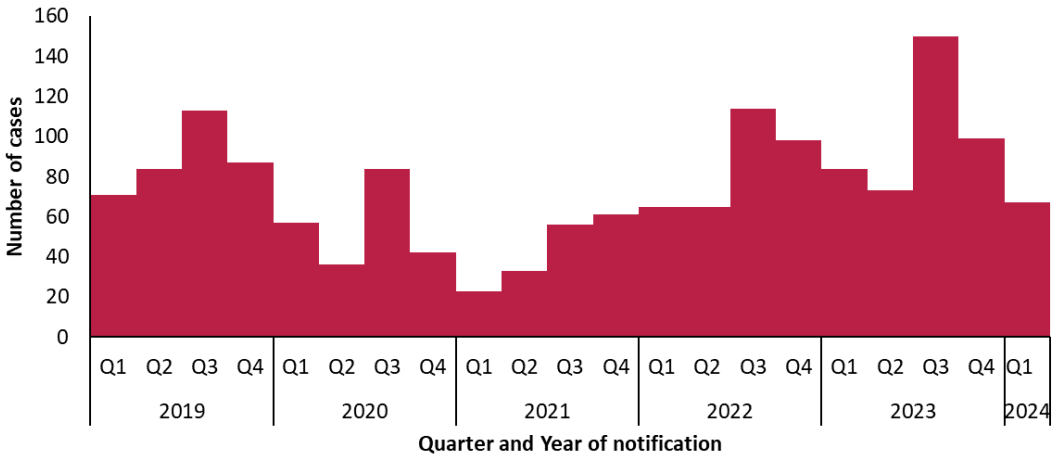


Location	Outbreaks (N)		Total Number ill		Median ill		Range ill	
	Noro	AIG	Noro	AIG	Noro	AIG	Noro	AIG
Hospital	35	2	369	8	11	4	2-146	4-4
Nursing home	31	20	712	372	23	19	4-52	6-36
Residential institution	6	8	128	63	21	8	13-29	2-16
Comm. Hosp/Long-stay unit	6	2	80	10	13	5	8-27	3-5
Total	78	32	1289	453	17	14	2-146	2-36

- There were 672 cases of Norovirus infection notified in Q1 2024, increased from 548 in Q1 2023
- 78 Norovirus and 32 AIG outbreaks were reported in Q1 2024. All were in health care settings.

Data source: Computerised Infectious Diseases Reporting (CIDR) system 22/04/2024

Salmonellosis in Ireland, Q1 2024



Serotype	Travel status			Total
	Domestic	Travel	Unknown	
Salmonella Enteritidis	7	9	2	18
Salmonella Typhimurium inc. monophasic Typhimurium	12	5	0	17
Other serotypes	11	16	5	32
Total	**30**	**30**	**7**	**67**

Outbreak Type	Number of outbreaks	Total number ill	Range number ill
Family	3	6	2-2
General	0	N/A	N/A
Total	**3**	**6**	**2-2**

- 67 cases of salmonellosis were notified in Q1 2024, decreased from 84 in Q1 2023
- Where travel history was known, 50% of cases were travel-associated and 50% were domestically-acquired
- Among domestic cases, infection with *S*. Typhimurium was more common, while infection with *S*. Enteritidis was more common among travel-associated cases
- Three outbreaks of salmonellosis were notified in Q1 2024

Data source: Computerised Infectious Diseases Reporting (CIDR) system 22/04/2024

Genomic analysis of non-typhoidal *Salmonella* in Ireland, Q1 2024

Serotype	Number of isolates	Proportion of sequenced isolates
Salmonella Enteritidis	19	30%
Salmonella Typhimurium inc. monophasic Typhimurium	18	28%
Salmonella Chester	6	9%
Salmonella Bareilly	3	5%
Salmonella Infantis	2	3%
Other serotypes	16	25%
Total	**64**	**100%**

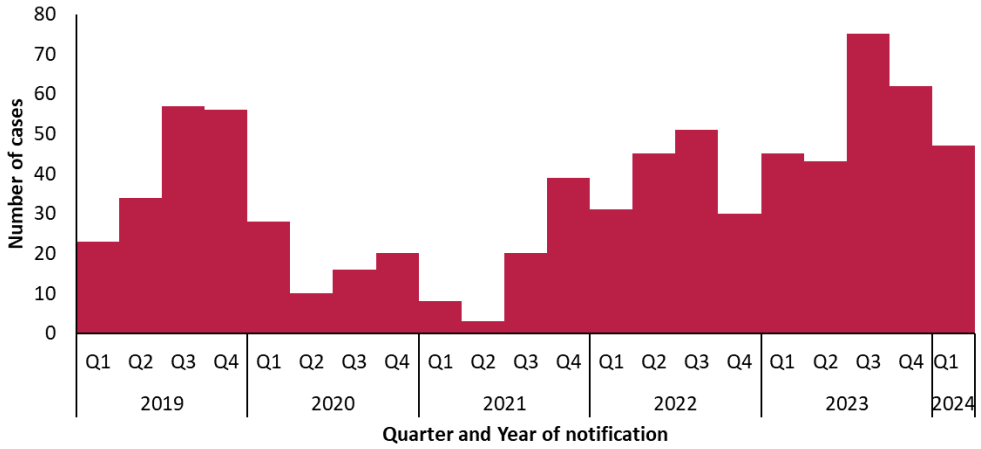
Antimicrobial class	Number isolates with resistance markers	Proportion of sequenced isolates
Quinolones	32	50%
Tetracycline	17	27%
Sulphonamides	15	23%
Ampicillin	13	20%
Chloramphenicol	2	3%
Trimethoprim	2	3%
Third generation cephalosporins	1	2%
Aminoglycosides	1	2%

Specimen type	Number of isolates
Faeces	58
Blood	5
Other	1
Total	**64**

- 64 non-typhoidal *Salmonella* (NTS) isolates were sequenced in the NSSLRL in Q1 2024*
- The most frequently seen serotypes were *S*. Enteritidis and *S*. Typhimurium
- 8% of isolates were from bloodstream infections
- Antimicrobial resistance is predicted based on whole genome sequencing (WGS) data

*The number of isolates sequenced in the NSSLRL may not match the number of cases notified, as dates are based on date received in the laboratory which may not align with notification date. Furthermore, isolates may be sequenced in the NSSLRL for cases that do not meet the criteria for notification under the Irish case definition.

Shigellosis in Ireland, Q1 2024



Travel	Child		Adult Female		Adult Male		Total	
	N	%	N	%	N	%	N	%
Domestic	2	40%	4	36%	14	45%	20	43%
Travel - Europe	0	0%	1	9%	8	26%	9	19%
Travel - Outside Europe	3	60%	4	36%	5	16%	12	26%
Unknown	0	0%	2	18%	4	13%	6	13%
Total	**5**	**100%**	**11**	**100%**	**31**	**100%**	**47**	**100%**

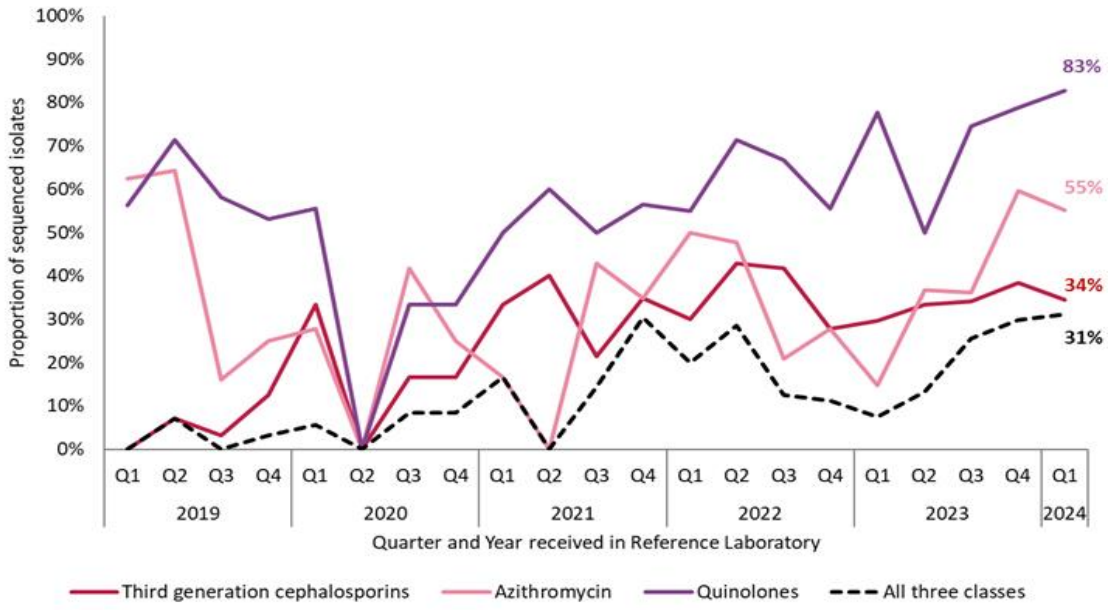
Outbreak Type	Number of outbreaks	Total number ill	Range number ill
Family	2	4	2-2
General	0	N/A	N/A
Total	**2**	**4**	**2-2**

- 47 cases of shigellosis were notified in Q1 2024 (39 confirmed and 8 probable), comparable to 45 in Q1 2023
- Where travel history was known, 49% of cases were domestically-acquired, 29% were associated with travel outside Europe and 22% were associated with travel to another European country
- Adult males continue to be the group most affected as sexual transmission among gay, bisexual and other men who have sex with men (gbMSM) is a key feature of shigellosis in Ireland
- Two outbreaks were notified during Q1 2024

Data source: Computerised Infectious Diseases Reporting (CIDR) system 22/04/2024

Genomic analysis of *Shigella* in Ireland, Q1 2024

Serotype	Number of isolates	Proportion of sequenced isolates
Shigella sonnei	14	48.3%
Shigella flexneri	14	48.3%
Shigella boydii	1	3.4%
Total	**29**	**100%**



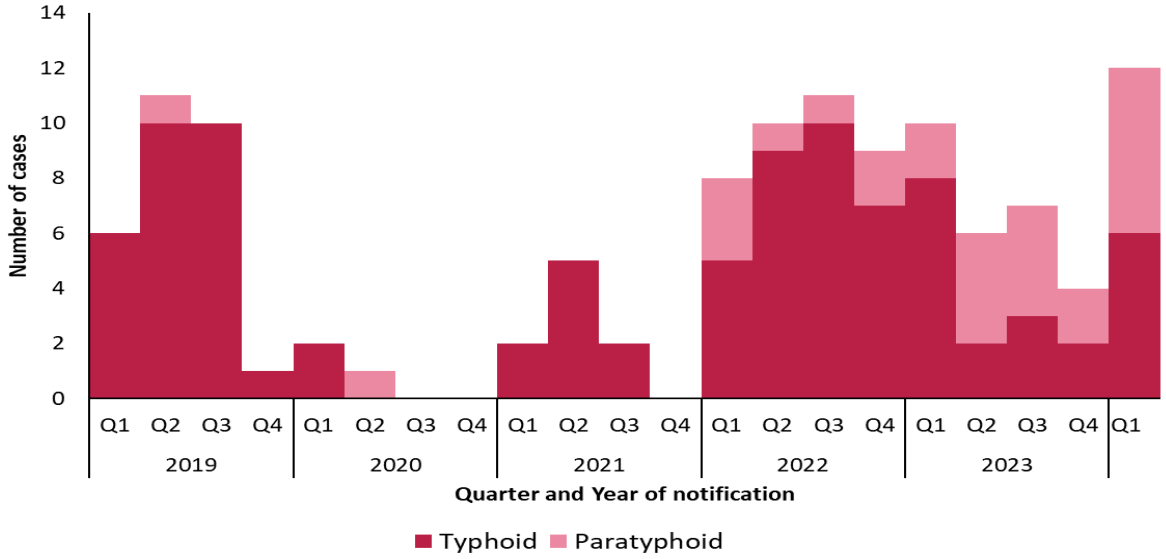
- 29 *Shigella* isolates were sequenced in the NSSLRL in Q1 2024*
- The most frequently seen serotypes were *S. sonnei* and *S. flexneri*
- Antimicrobial resistance is predicted based on whole genome sequencing (WGS) data:
  - 83% of isolates were predicted to be fluroquinolone resistant, increased from 72% in 2023*
  - 55% were predicted to be azithromycin resistant, increased from 40% in 2023*
  - 34% were predicted to be resistant to third generation cephalosporins, unchanged from 34% in 2023*
  - 31% were predicted to be resistant to all three classes of antimicrobials, increased from 21% in 2023*

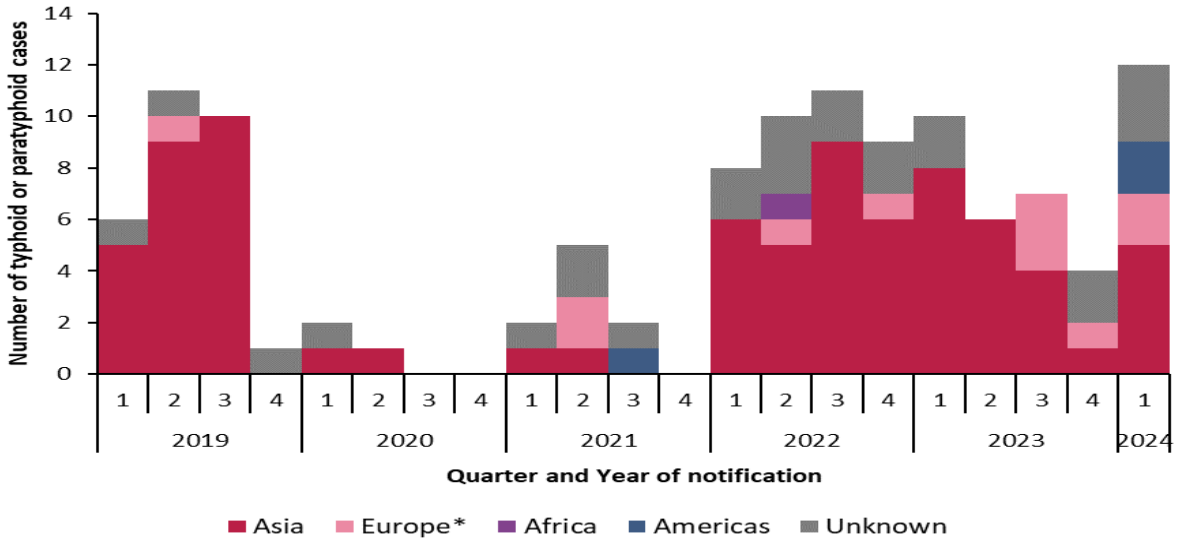
*full year data

*The number of isolates sequenced in the NSSLRL may not match the number of cases notified, as dates are based on date received in the laboratory which may not align with notification date. Furthermore, according to the Irish case definition probable cases of shigellosis may be notified when *Shigella* spp. nucleic acid is detected in a clinical specimen in the absence of subsequent culture confirmation.

Data source: National Salmonella, Shigella and Listeria Reference Laboratory (NSSLRL)

Typhoid and Paratyphoid in Ireland, Q1 2024





- Six cases of typhoid were notified in Q1 2024, decreased from eight cases notified in Q1 2023
- Six cases of paratyphoid were notified in Q1 2024, increased from two cases notified in Q1 2023
- Where travel history was known, 56% of cases travelled to Asia, most frequently to India or Pakistan

* Ireland was reported as country of infection for a small number of cases. These infections were typically secondary infections, following return of a close contact from an endemic country or were laboratory-acquired infections.

Data source: Computerised Infectious Diseases Reporting (CIDR) system 22/04/2024

Genomic analysis of *Salmonella* Typhi and Paratyphi in Ireland, Q1 2024

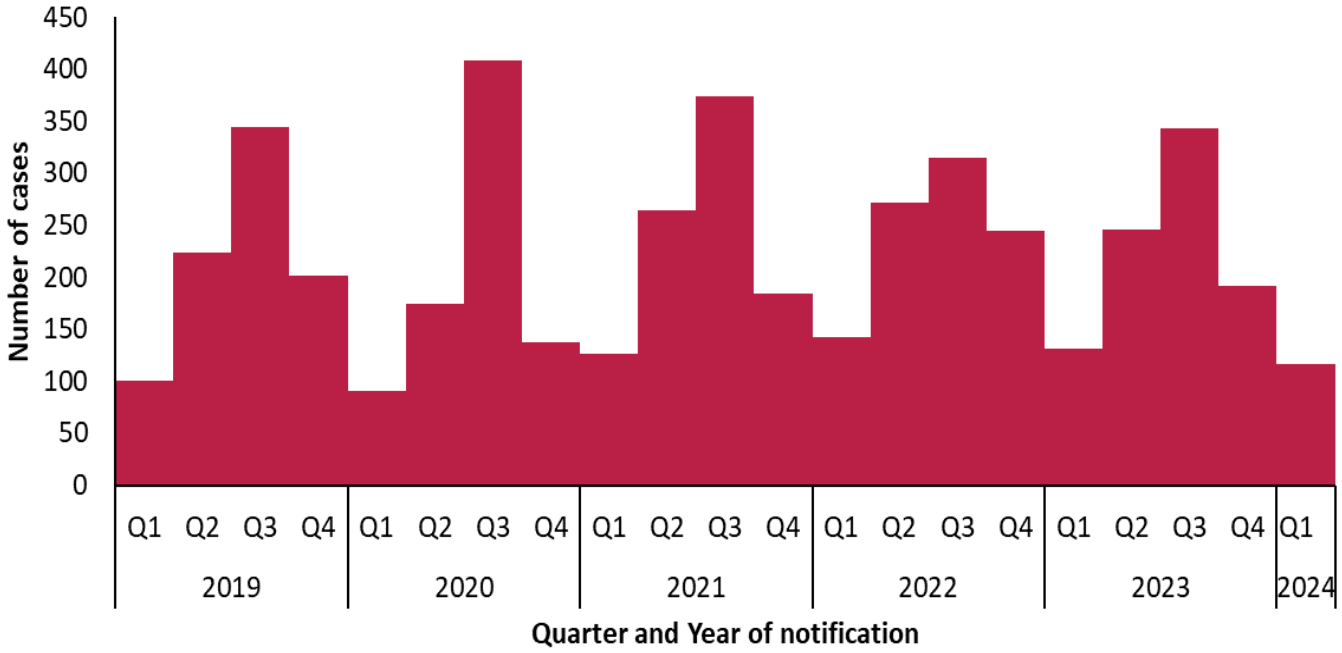
Antimicrobial class	Number of isolates with resistance determinants	Proportion of sequenced isolates
Quinolones	7	70%
Ampicillin	1	10%
Chloramphenicol	1	10%
Sulphonamide	1	10%
Trimethoprim	1	10%
Aminoglycosides	0	0%
Tetraracycline	0	0%
Third generation cephalosporin	0	0%

- 10 isolates of Salmonella Typhi (n=4), S. Paratyphi A (n=3) and S. Paratyphi B (n=3) were sequenced in the NSSLRL in Q1 2024*
- Antimicrobial resistance is predicted based on whole genome sequencing (WGS) data: 70% of isolates sequenced were predicted to be resistant to quinolones, while none were predicted to be resistant to third generation cephalosporins, decreased from 37.5% with predicted third generation cephalosporin resistance in Q1 2023.

*The number of isolates sequenced in the NSSLRL may not match the number of cases notified, as dates are based on date received in the laboratory which may not align with notification date. Furthermore, isolates may be sequenced in the NSSLRL for cases that do not meet the criteria for notification under the Irish case definitions for typhoid and paratyphoid.

Data source: National Salmonella, Shigella and Listeria Reference Laboratory (NSSLRL)

VTEC in Ireland, Q1 2024



Type	Outbreaks (N)	Number ill	Median ill	Range ill
General	1	10	N/A	N/A
Family	2	4	2	N/A
Total	**3**	**14**	**N/A**	**N/A**

Patient type	Number of cases	Proportion of cases
Hospital Inpatient	50	43%
GP Patient	48	41%
A&E Patient/Outpatient	13	11%
Other	1	1%
Unknown	4	3%
Total	**116**	**100%**

	Bloody diarrhoea		HUS	
	N	% (where known)	N	% (where known)
Yes	28	28%	1	1%
No	67	68%	70	85%
Unknown	4	4%	11	13%
Not specified	17	N/A	34	N/A
Total	**116**	**N/A**	**116**	**N/A**

Data source: Computerised Infectious Diseases Reporting (CIDR) system 22/04/2024

Genomic analysis of VTEC in Ireland, Q1 2024

Serogroup	Verotoxin	N	%	*eae* positive		*ehxA* positive	
				N	%	N	%
E. coli O157	vt1	0	0%	0	N/A	0	N/A
	vt2	6	35%	6	100%	5	83%
	vt1 + vt2	11	65%	11	100%	11	100%
E. coli O26	vt1	4	31%	4	100%	4	100%
	vt2	0	0%	0	N/A	0	N/A
	vt1 + vt2	9	69%	8	89%	9	100%
Other serogroups	vt1	21	40%	3	14%	13	62%
	vt2	19	37%	3	16%	4	21%
	vt1 + vt2	12	23%	2	17%	10	83%

- 116 cases of VTEC notified in Q1 2024, lower than in Q1 2023 (n=131)
- 43% were hospital inpatients
- One case of HUS in Q1 2024, decreased from seven cases of HUS in Q1 2023
- 3 VTEC outbreaks were reported, including 1 outbreak in a residential institution.
- 82 isolates were sequenced in the VTEC Reference Laboratory*
- The most common serogroups reported among culture confirmed cases were as follows: O157 (21%; n=17), O26 (16%; n=13), O91 (7%; n=6), O78 (6%; n=5) and O145 (5%; n=4)

*The number of isolates sequenced in the Public Health Laboratory, Cherry Orchard (Reference Laboratory) may not match the number of cases notified, as dates are based on date received in the laboratory which may not align with notification date. Furthermore, isolates may be sequenced in the Reference Laboratory for cases that do not meet the criteria for notification under the Irish case definitions for VTEC.

Data source: Computerised Infectious Diseases Reporting (CIDR) system 22/04/2024 and Public Health Laboratory, Cherry Orchard 07/05/2024