Gastroenteric and Zoonotic Diseases in Ireland, 2023

April 2025

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Acknowledgements

Sincere thanks are extended to all those who participated in the collection of the data used in this report. This includes the notifying physicians, staff in public health departments, epidemiologists, surveillance staff, microbiologists, nurses, laboratory staff and administrative staff.

Additional thanks to our colleagues in the Public Health Laboratory (PHL) in Cherry Orchard, the National Salmonella, Shigella and Listeria Reference Laboratory (NSSLRL) and the National Virus Reference Laboratory (NVRL) for ongoing collaboration, support and advice in the surveillance of gastroenteric and zoonotic diseases in Ireland.

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Technical notes

1. Data are based on statutory notifications and were extracted from the Computerised Infectious Disease Reporting (CIDR) system on the indicated dates.
2. Data are provisional and subject to ongoing review, validation and update. As a result, figures in this report may differ from figures published at other times.
3. Population data were taken from the Central Statistics Office. In general, a 5 year rule of thumb was used, i.e. year of census and two years before and after. In situations where the census was cancelled/delayed (e.g. 2021), population estimates for the year(s) involved were reviewed, and the census with results most closely aligning to the estimates was applied.
4. CIR refers to the Crude Incidence Rate
5. Counties covered by each HSE Health Region are as follows:
   - **HSE Health Region Dublin & Northeast:** Cavan, Louth, Meath, Monaghan, Dublin North Central, Dublin North-West and Dublin North.
   - **HSE Health Region Dublin & Midlands:** Dublin South City, Dublin South-West, Dublin West, Kildare, Wicklow (West), Laois, Offaly, Longford and Westmeath.
   - **HSE Health Region Dublin & Southeast:** Dublin South-East, Dun Laoghaire, Carlow, Kilkenny, South Tipperary, Waterford, Wexford and Wicklow (East).
   - **HSE Health Region West & Northwest:** Galway, Mayo, Roscommon, Donegal, Sligo, Leitrim.
   - **HSE Health Region Mid-West:** Limerick, Clare, North Tipperary.
   - **HSE Health Region South West:** Cork and Kerry.

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.

- Because of the risk of avian influenza, the public are warned of the dangers of sick or dead wild birds. DAFM requests that all sick/dead wild birds are reported via the Avian Check app.

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.

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/

Key points

- In 2023, notification of most gastroenteric and zoonotic diseases had returned to pre-pandemic levels
- This report contains national trend data and analyses to the end of 2023 as well as comparisons with international trends for these diseases
- We also report trends in antimicrobial resistance for WHO priority pathogens, non-typhoidal and typhoidal *Salmonella* and *Shigella*[1] and molecular data from our Reference Laboratory partners for a selection of diseases
- Notification of diseases such as campylobacteriosis, salmonellosis, VTEC, and norovirus were largely unchanged in 2023 compared to previous years and still remain a significant burden in Ireland
- Notifications of cryptosporidiosis, giardiasis, shigellosis and leptospirosis were higher in 2023 compared to previous years
  - A large national travel-associated outbreak of cryptosporidiosis and a national incident of shigellosis associated with sexual transmission among gay, bisexual and other men who have sex with men (gbMSM) account for increases seen in these diseases in 2023
  - The reasons behind the increased numbers of giardiasis and leptospirosis are less clear
- Data on hepatitis A, listeriosis, typhoid/paratyphoid, rotavirus and other less frequently notified infectious intestinal diseases (IID) and non-IID zoonoses are also contained in this report

1. WHO Bacterial Priority Pathogens List, 2024: bacterial pathogens of public health importance to guide research, development and strategies to prevent and control antimicrobial resistance

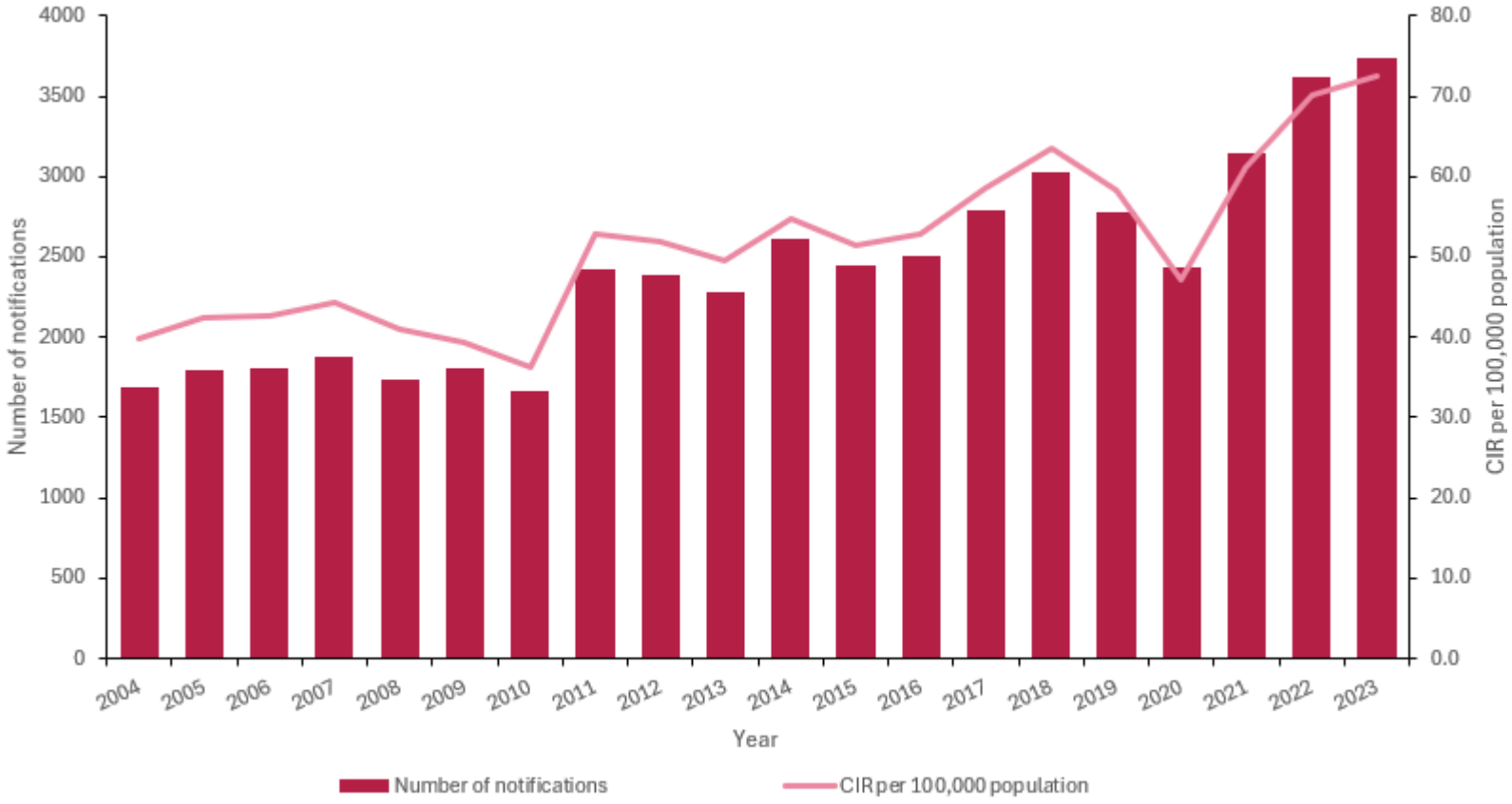
Campylobacteriosis in Ireland

Campylobacteriosis in Ireland

- Campylobacteriosis is the most frequent cause of gastroenteritis in Ireland and across the EU
- At least a dozen species of *Campylobacter* have been implicated in human disease, with *C. jejuni* (80–90%) and *C. coli* (10-15%) being the most common
- Patients typically present with a self-limited diarrheal illness lasting 5 to 7 days
- Rarely, *C. jejuni* infection may lead to autoimmune conditions known as Guillain-Barré syndrome (GBS) or Miller Fisher syndrome
- Foodborne Campylobacteriosis is associated with the consumption of raw milk, undercooked poultry, and contaminated water. Touching animals carrying *Campylobacter* can also cause infection.
- Children aged under 5 years and people aged over 60 years, farm workers, food handlers and travellers to developing countries are the groups most at risk of infection
- There is a limited understanding of transmission routes in Ireland as enhanced surveillance is not undertaken for campylobacteriosis cases and a low number of outbreaks are reported. The last sporadic campylobacteriosis case control study in Ireland was undertaken in 2002, so further research is required to understand more about more risk factors and vehicles of infection.

For more information on risk factors and precautions please see the Campylobacteriosis Fact Sheet on the HPSC website.

Campylobacteriosis in Ireland: trends, 2004-2023

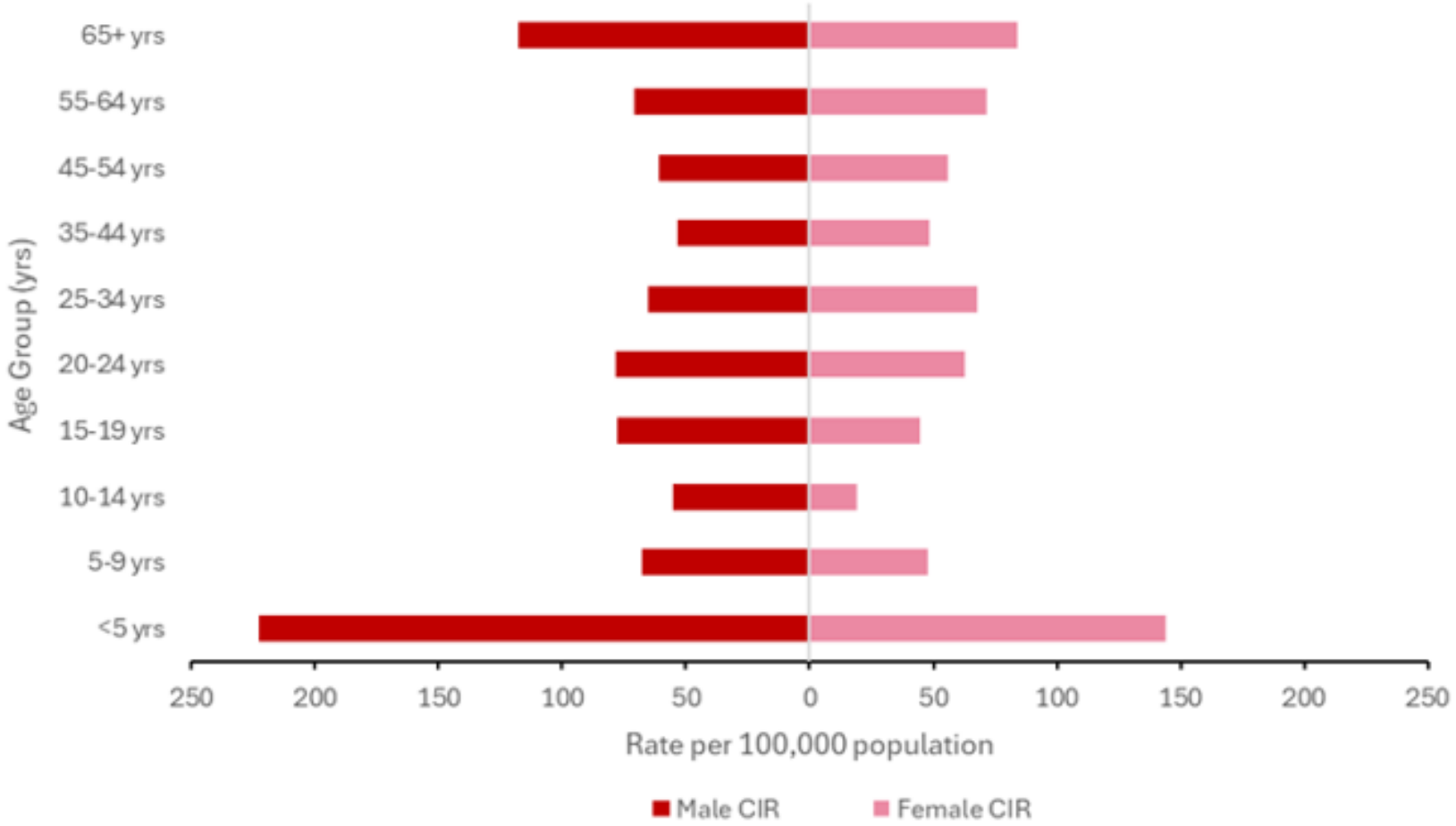


Data source: Computerised Infectious Diseases Reporting System (CIDR) 26/09/2024

3,737 cases of *Campylobacter* infection were notified in 2023, an increase of 3.4% on 2022. The incidence rate was 72.6/100,000 population and has been increasing year on year since 2021.

Campylobacteriosis rates remained largely unaffected by the COVID-19 pandemic, apart from a slight decrease in cases notified in 2020. The incidence rates in 2022 and 2023 were the highest recorded since the disease became notifiable in its own right in 2004.

Campylobacteriosis in Ireland: age and sex distribution, 2023



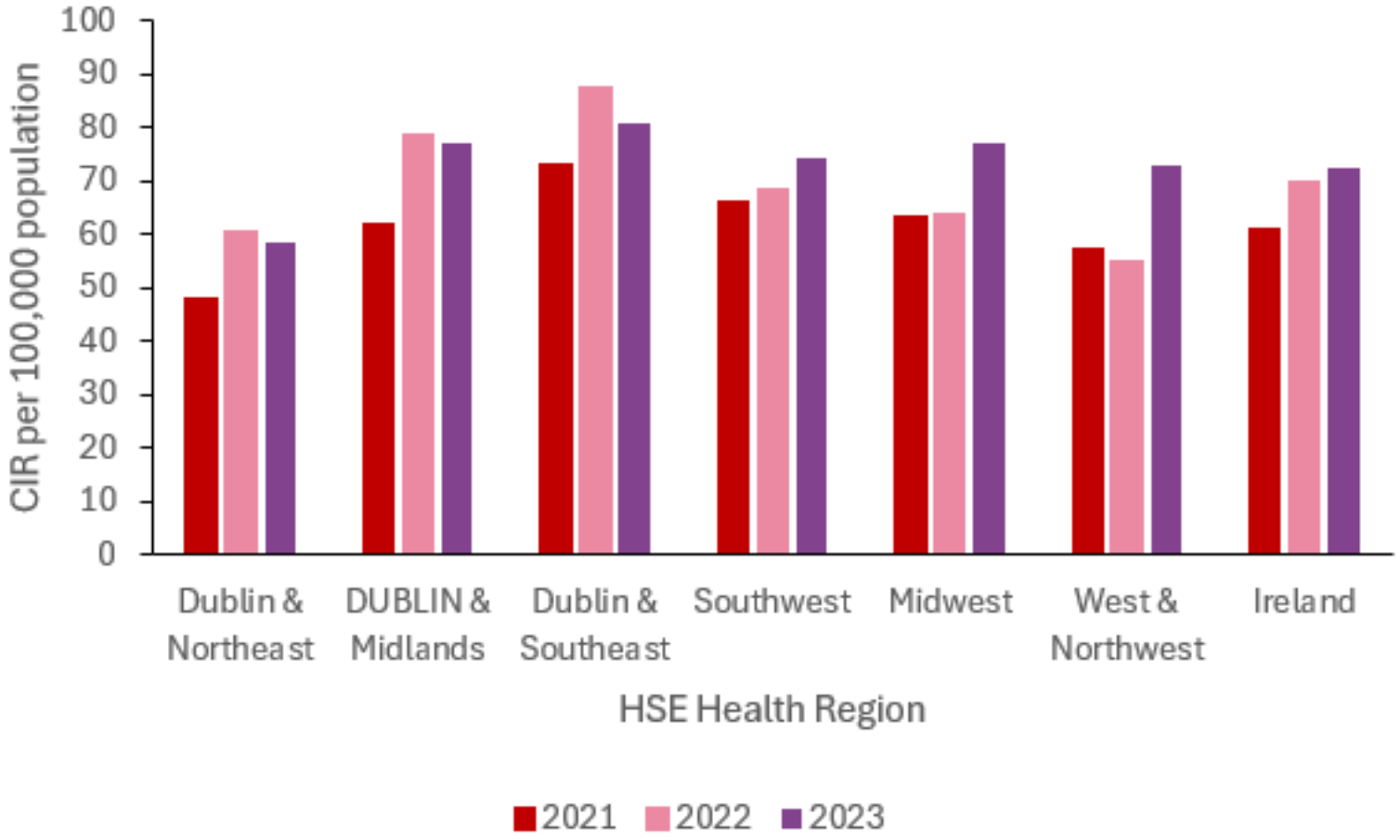
In 2023, 55% (n=2073) of cases were male and 45% (n=1663) were female.

The highest age-specific incidence rate was among <5 year olds (203/100,000 population) with males accounting for 61% of the cases in this age group.

A notable increase in incidence rate was noted in males aged 15-19 years (CIR 77.8/100,000) and in males 65+ years (117.6/100,000) in 2023 compared with 2022. A notable decrease in incidence rates were seen in the <5 years group (males 222.6/100,000 & females 143.7/100,000) compared to 2022.

Data source: Computerised Infectious Diseases Reporting System (CIDR) 26/09/2024

Campylobacteriosis in Ireland: geographical distribution 2021-2023



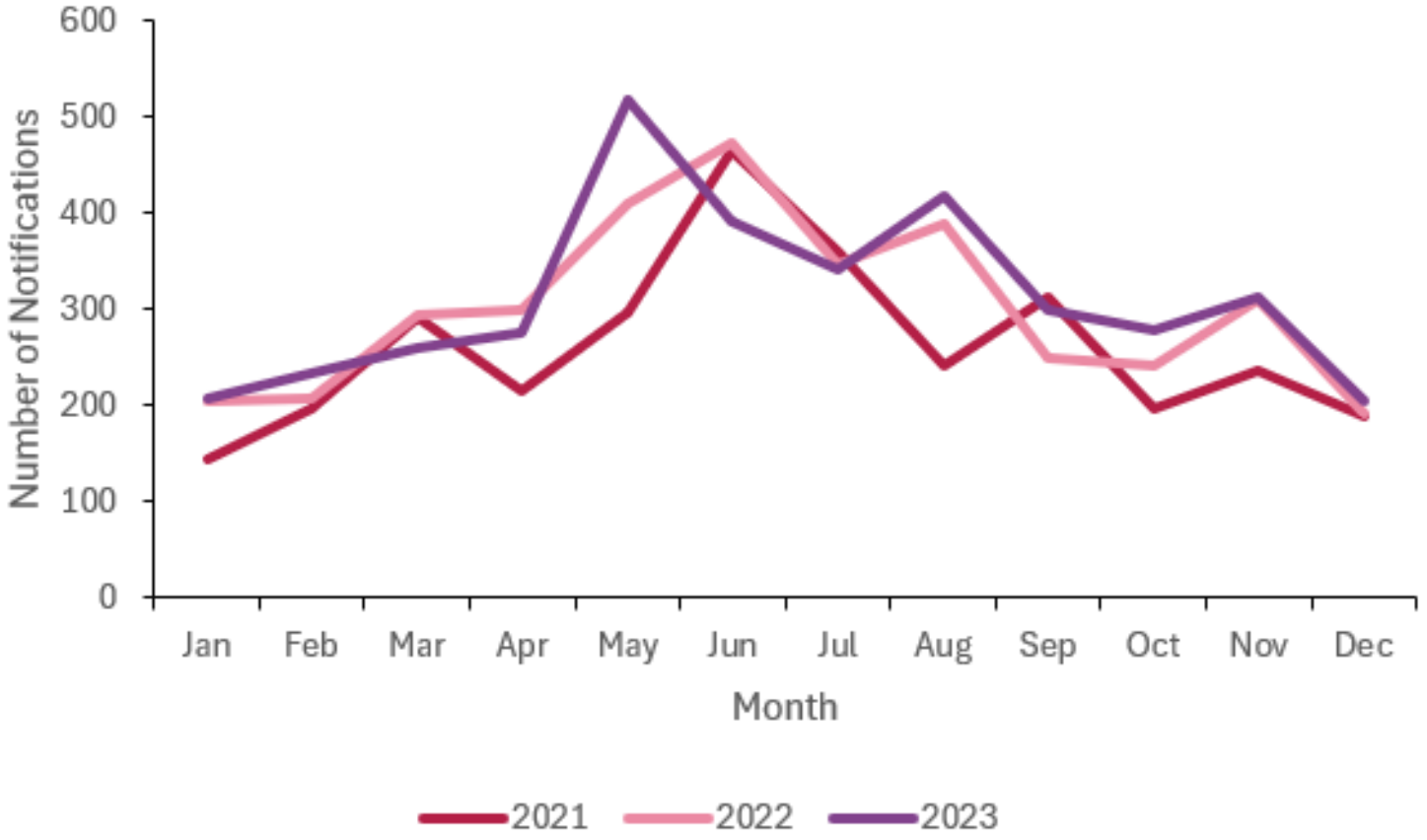
Data source: Computerised Infectious Diseases Reporting System (CIDR) 26/09/2024

The Dublin & Southeast region had the highest rate of notifications (87.9/100,000) and the Dublin and Northeast region had the lowest rate of notifications (58.6/100,000) in 2023.

The CIR for Campylobacteriosis remained largely unchanged in Dublin & Northeast and Dublin & Midlands, However, incidence rates increased in the Southwest, Midwest and West & Northwest, when compared to 2022.

*Trend data by HSE Health Region should be interpreted with caution due the re-organisation of HSE Health boards to HSE Health Regions in 2022.

Campylobacteriosis in Ireland: seasonal distribution 2021-2023

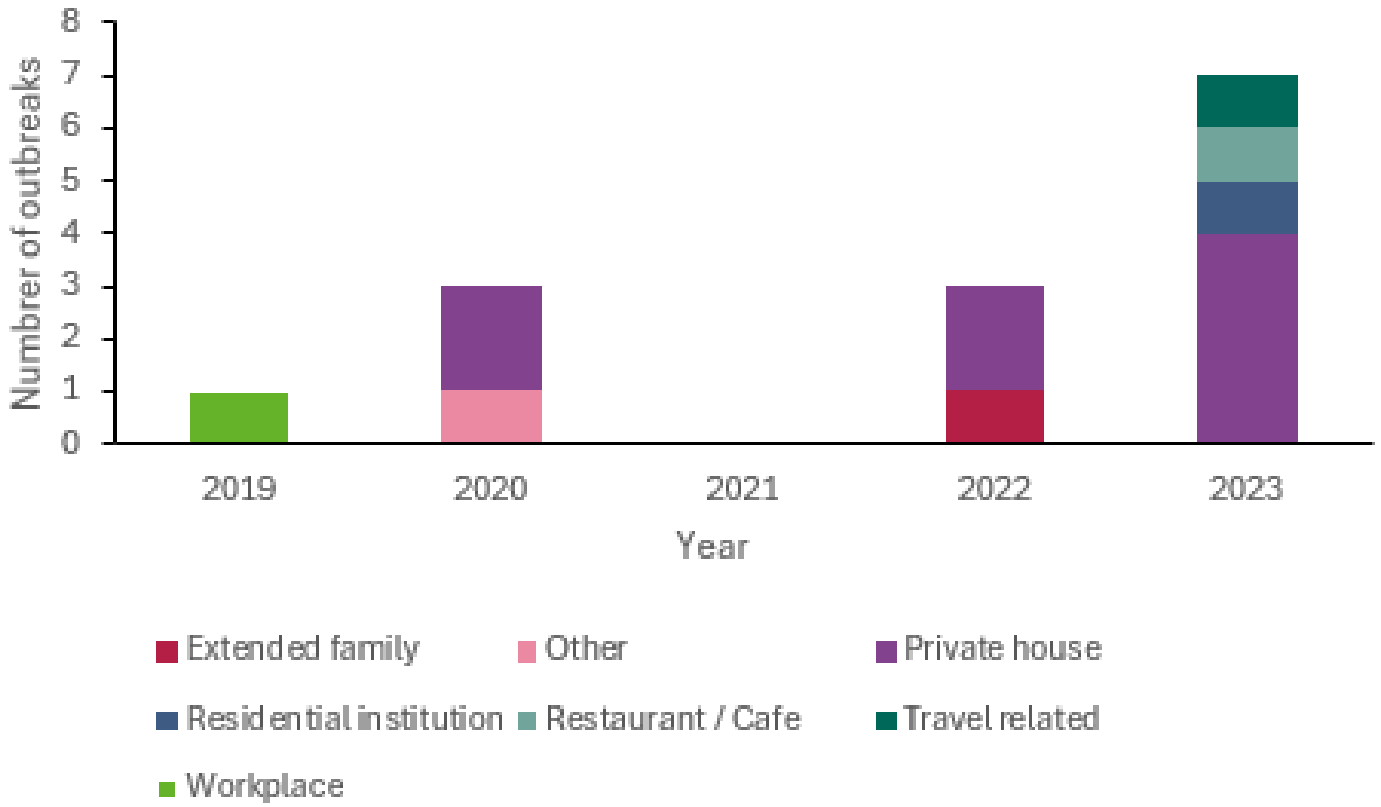


Campylobacteriosis notifications were higher in 2023 than in 2021 and 2022 but followed similar seasonal trends.

Notification numbers peaked in May 2023 (n=517), which was slightly earlier than the peak seen in 2021 and 2022.

Data source: Computerised Infectious Diseases Reporting System (CIDR) 26/09/2024

Campylobacteriosis in Ireland: outbreaks and clusters, 2019-2023



Data source: Computerised Infectious Diseases Reporting System (CIDR) 26/09/2024 and Public Health Laboratory Cherry Orchard

[1] National Reference Laboratory Campylobacter Annual Report 2023

There were 7 campylobacteriosis outbreaks notified in Ireland in 2023 and this is compared to 3 in 2022.

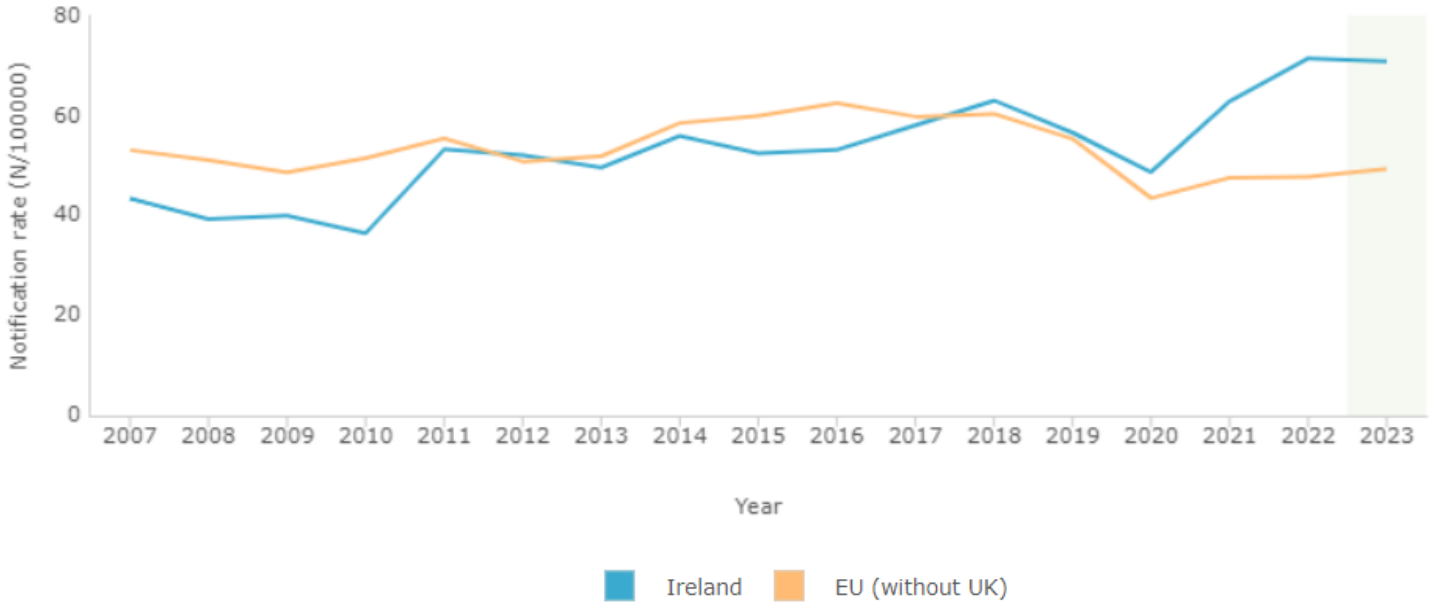
Private house outbreaks were the most common type of campylobacteriosis outbreak notified in Ireland in 2023. Outbreaks ranged in size from 1 to 4 people ill, with a median of 3 people ill.

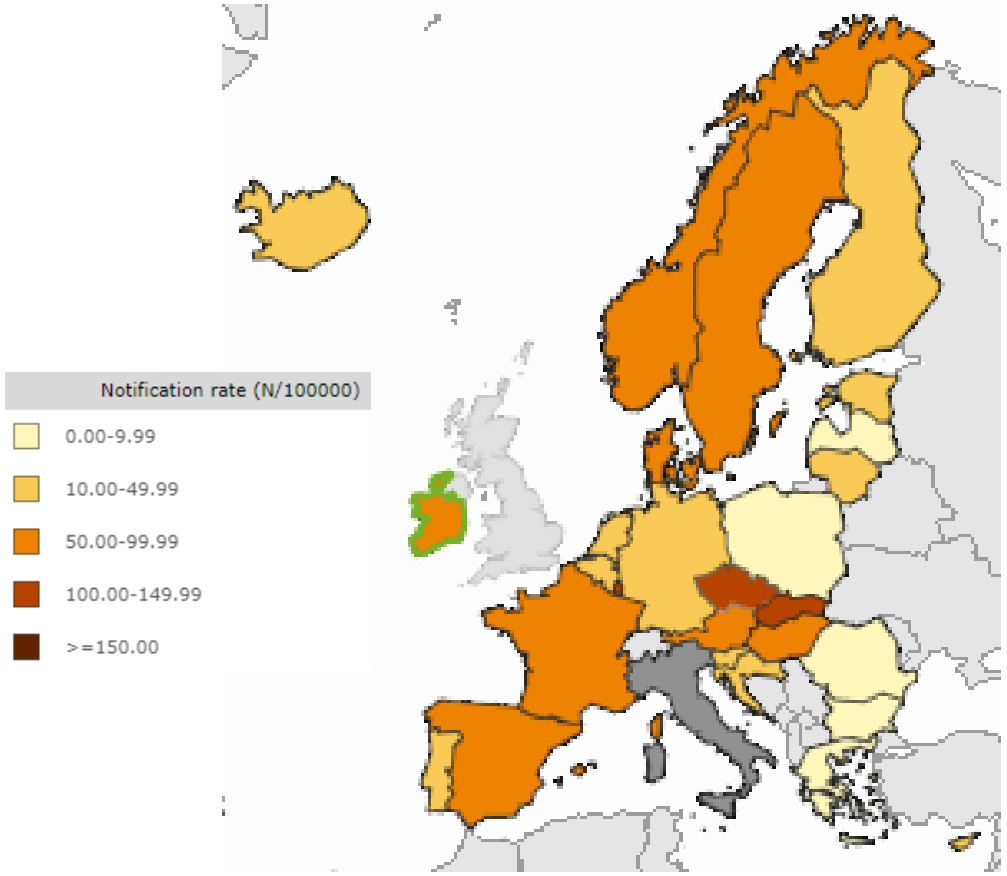
All campylobacteriosis outbreaks in 2023 were reported as due to person-to person spread, except a restaurant/café outbreak for which the transmission route was not specified.

A sentinel *Campylobacter* Reference Service has been operating at the Public Health Laboratory in Cherry Orchard since 2019. Isolates from approximately 7% of campylobacteriosis cases notified in 2023 were sequenced[1] (85% were *C. jejuni*, 13% were *C. coli* and 1.5% were *C. fetus*). Most identified clusters were too diffuse geographically or temporally to require further public health action.

Campylobacteriosis in the EU/EAA, 2007-2023

Campylobacteriosis notification rates in Ireland were lower than the EU average between 2007 and 2011. Rates in Ireland were similar to the rest of the EU between 2011 and 2020. From 2020 until 2023 notification rates in Ireland increased above the EU average. This trend was seen in almost all age groups in 2023, but particularly among adults.





Data source: ECDC Surveillance Atlas of Infectious Diseases 30/09/2024

Campylobacteriosis in Ireland: 2023 summary

- There were 3,737 cases of campylobacteriosis notified in Ireland in 2023
- The crude incidence rate (CIR) of notifications increased slightly from 70.2/100,000 in 2022 to 72.6/100,000 in 2023, which was higher than pre-pandemic rates
- The highest age-specific notification rate was among those aged <5 years
- Overall, 55% of campylobacteriosis notifications in Ireland were male in 2023
- The Dublin and Southeast area had the highest notification rate in 2023
- May, June and July were the peak months for campylobacteriosis notifications in 2023, similar to previous years
- Notification rates in Ireland (71/100,000) are currently above the EU average (49/100,000), in all age groups except for 5-14 year olds (47/100,000 in Ireland compared to 59/100,000 in the EU)

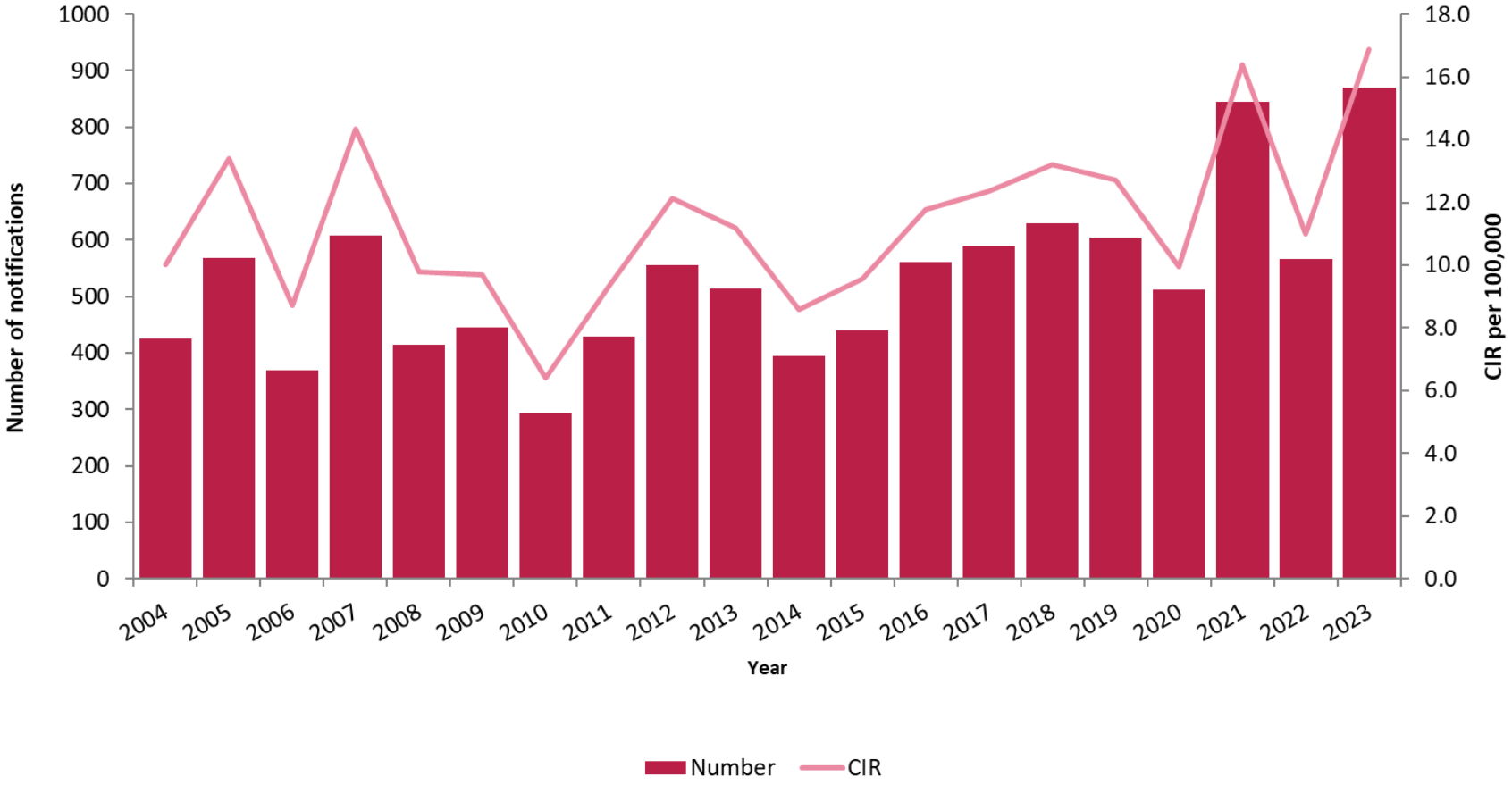
Cryptosporidiosis in Ireland

Cryptosporidiosis in Ireland

- Cryptosporidiosis is a diarrhoeal disease caused by a parasite (*Cryptosporidium*). The parasite is protected by an outer shell that allows it to survive outside the body for long periods of time and makes it very resistant to chlorine-based disinfectants. It can survive temperatures greater than 70°C.
- Cryptosporidiosis is a mild disease in healthy people. The most common symptom of cryptosporidiosis is watery diarrhoea. Other symptoms include dehydration, weight loss, stomach cramps or pain, fever, nausea and vomiting. Symptoms usually last about 1 to 2 weeks in persons with healthy immune systems. Some people with *Cryptosporidium* infection will have no symptoms at all.
- *Cryptosporidium* lives in the intestine of infected humans or animals. Millions of parasites can be released in a bowel movement from an infected human or animal. It is therefore found in soil, food, water, or surfaces that have been contaminated with human or animal faeces. It is a common cause of waterborne outbreaks of gastroenteritis.

For more information on risk factors and precautions please see the Cryptosporidiosis Fact Sheet on the HPSC website.

Cryptosporidiosis in Ireland: trends, 2004-2023

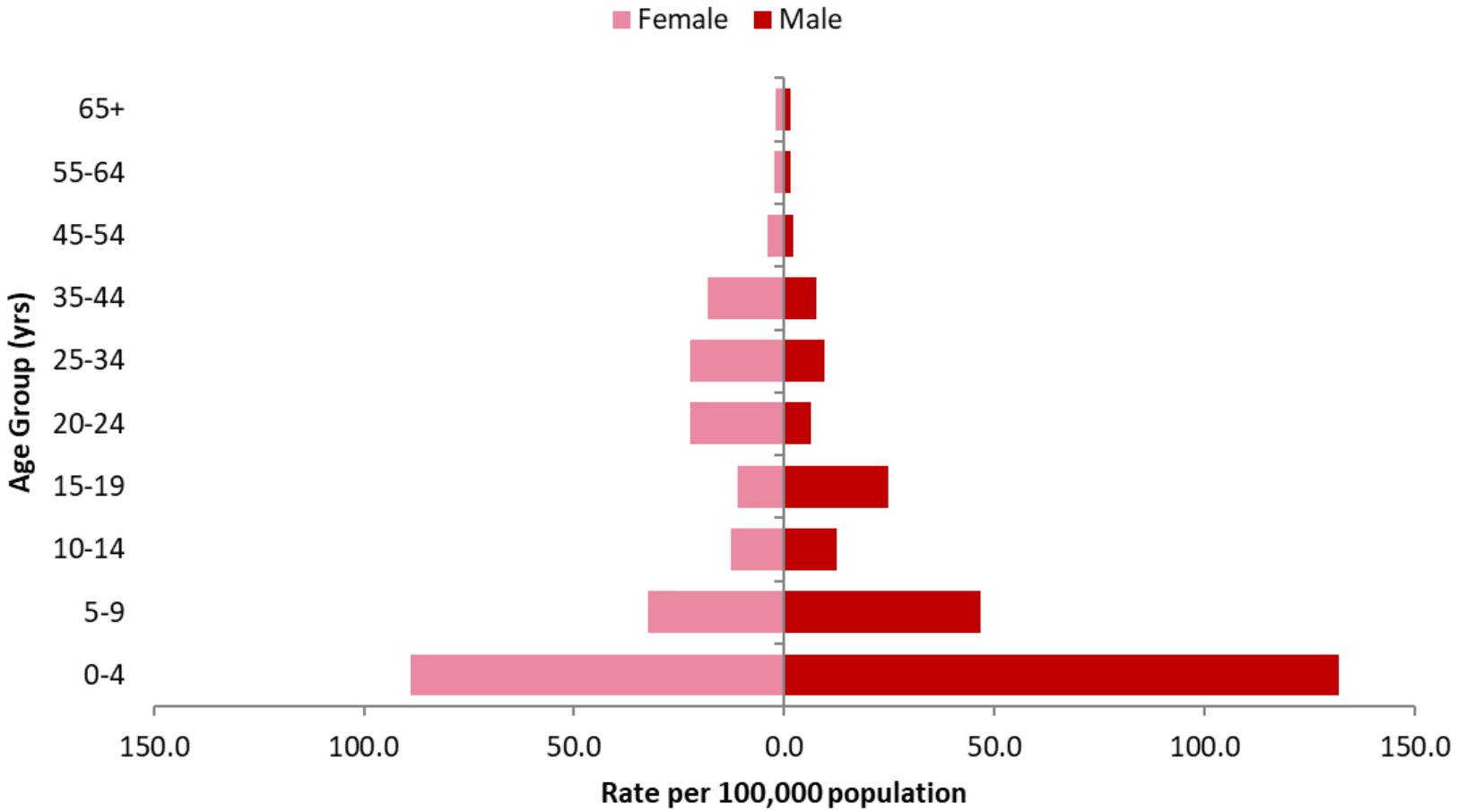


In 2023, 870 cryptosporidiosis cases were notified, giving a CIR of 16.9/100,000 which is a 54% increase when compared to 2022 (11.0/100,000).

The CIR in 2023 was the highest since 2004, slightly higher than in 2021 which was previously the highest notification rate since 2004 (16.4/100,000)

Data source: Computerised Infectious Diseases Reporting System (CIDR) 27/09/2024

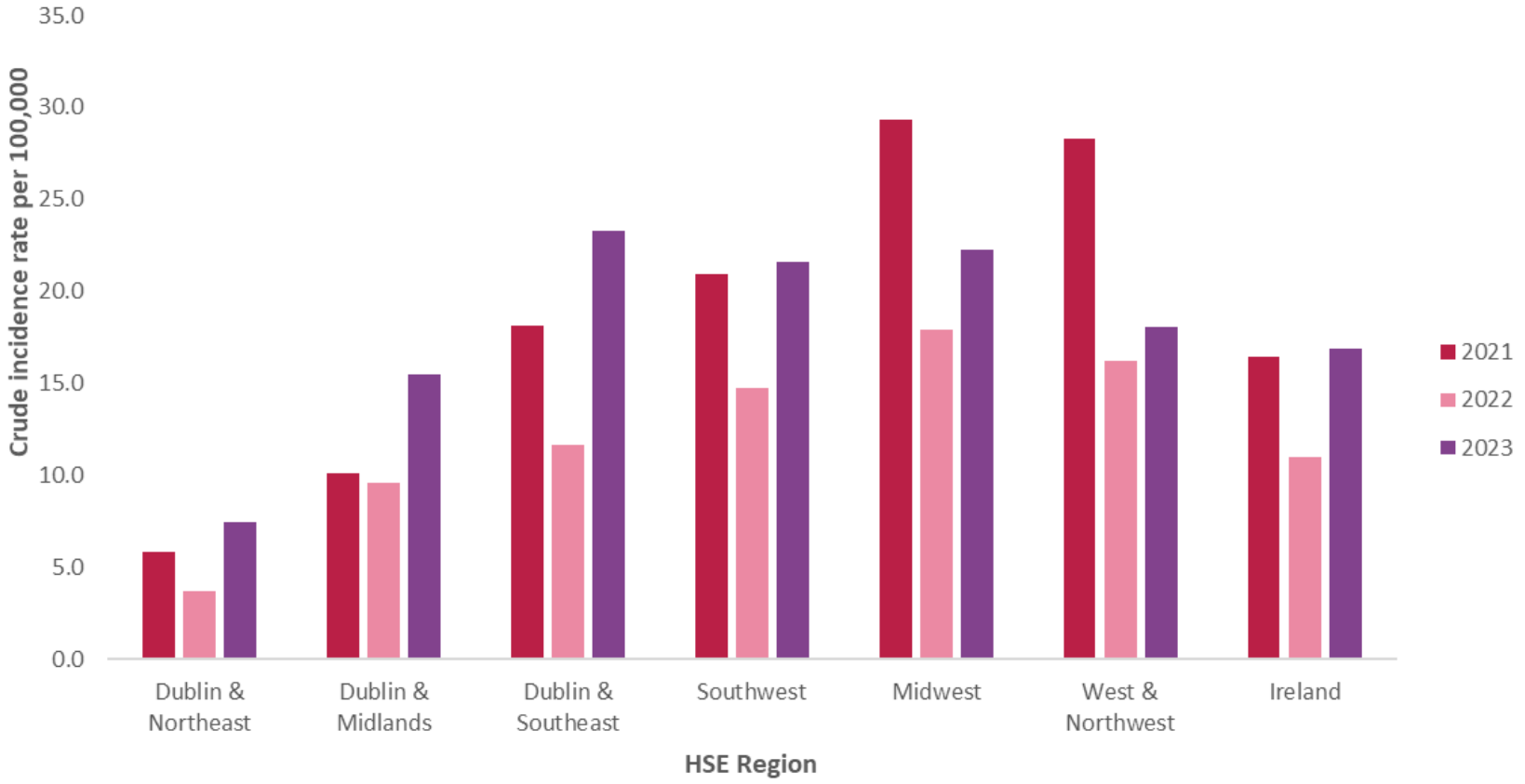
Cryptosporidiosis in Ireland: Age-specific incidence rate, 2023



As in 2022, the highest age-specific incidence rate in 2023 was in children under five years (111/100000 cases). The incidence was higher for males (132/100000) than females (89/100000) in this age group in 2023, but overall rates were similar among males and females. Age specific incidence increased in all age groups (except 20-24 years) in 2023 when compared to 2022.

Data source: Computerised Infectious Diseases Reporting System (CIDR) 27/09/2024

Cryptosporidiosis in Ireland: geographical distribution, 2021-2023

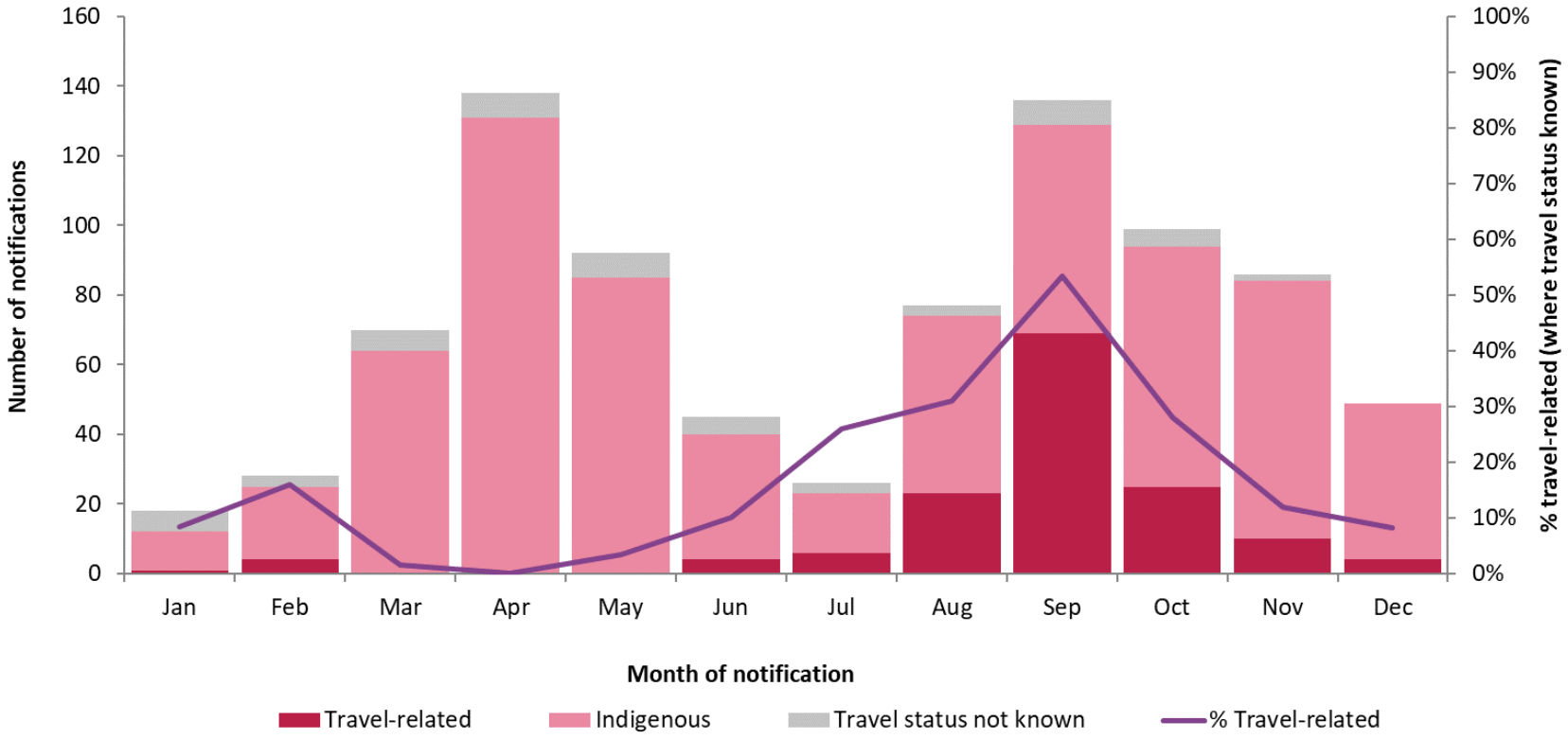


The CIR for cryptosporidiosis increased in all areas in 2023 when compared to the previous year and was highest in the Dublin & Southeast region (23.3/100000 population).

Data source: Computerised Infectious Diseases Reporting System (CIDR) 27/09/2024

*Trend data by HSE Health Region should be interpreted with caution due the re-organisation of HSE Healthboards to HSE Health Regions in 2022.

Cryptosporidiosis in Ireland: Seasonal distribution of cases by travel status, 2023



The highest number of cases were notified in springtime (March-May) and autumn time (August-Oct). The spring peak was associated with indigenous cases while the autumn peak was associated with an increase in the proportion of travel-related cases*.

*Travel-related cases are cases who reported international travel in the 2 weeks before onset of illness or where country of infection is recorded as a country other than Ireland.

Data source: Computerised Infectious Diseases Reporting System (CIDR) 27/09/2024

Cryptosporidiosis in Ireland: cases by travel status, 2018-2023

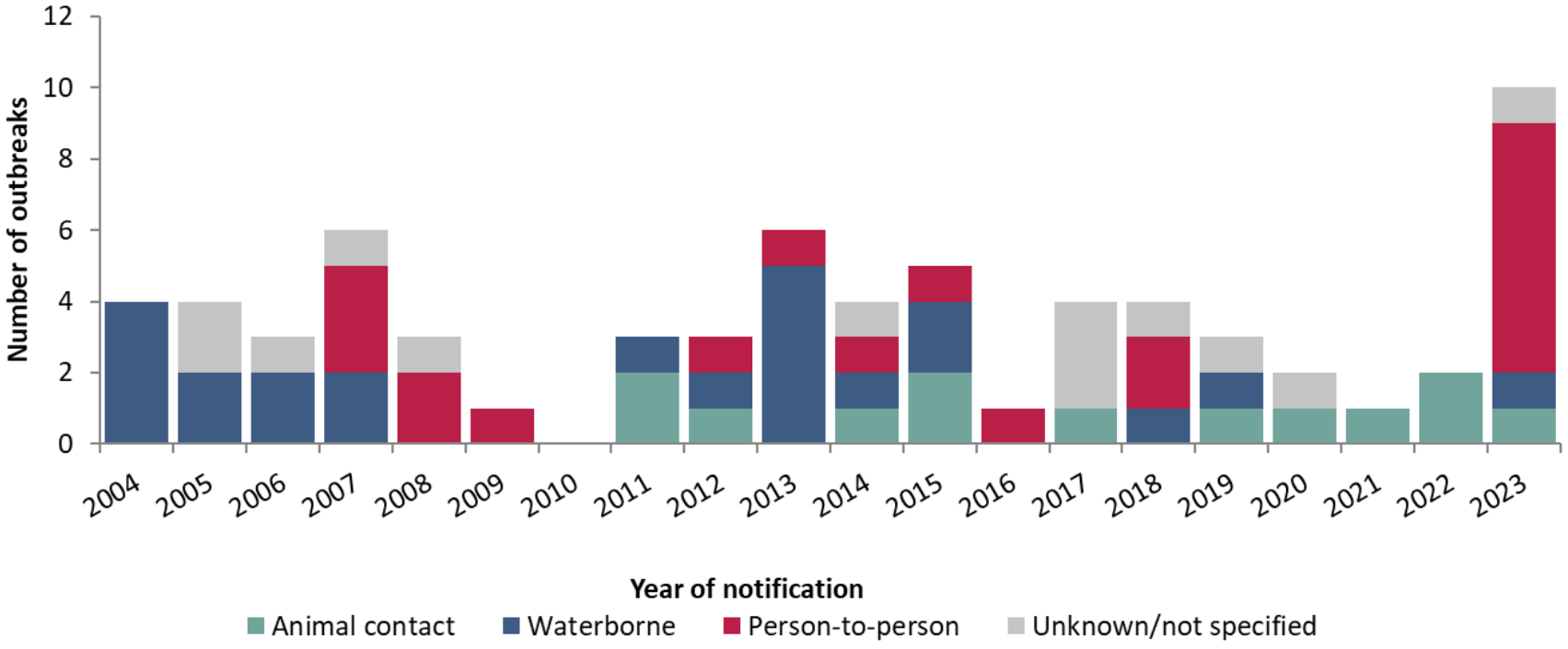
In 2023, 19% of cases were travel-related*, similar to 2019 (18%) and higher than in 2022 when 11% of cases were travel-related. During the pandemic years 2020 and 2021, 2% of cases each year were reported as travel-related*.

Disease Name	2019		2020		2021		2022		2023	
	N	% where known	N	% where known	N	% where known	N	% where known	N	% where known
Indigenous	429	82%	324	98%	556	98%	414	89%	665	81%
Travel-related	92	18%	6	2%	10	2%	51	11%	152	19%
Travel status not known	85	n/a	181	n/a	279	n/a	101	n/a	53	n/a
Total	**606**		**511**		**845**		**566**		**870**	

* Travel-related cases are cases who reported international travel in the 2 weeks before onset of illness or where country of infection is recorded as a country other than Ireland.

Data source: Computerised Infectious Diseases Reporting System (CIDR) 27/09/2024

Cryptosporidiosis in Ireland: general outbreaks, 2004-2023



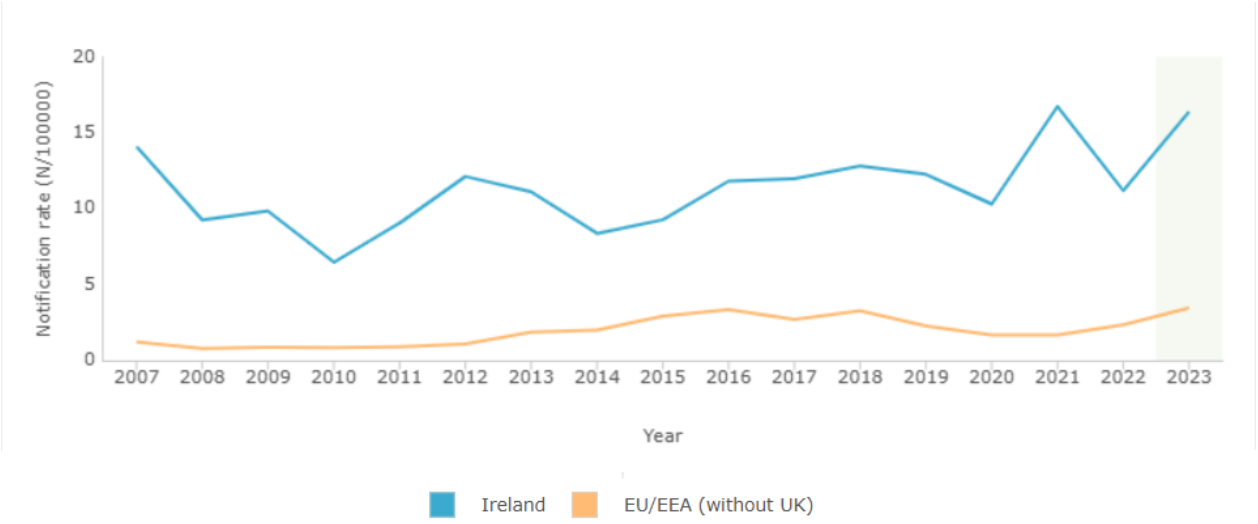
Data source: Computerised Infectious Diseases Reporting System (CIDR) 27/09/2024

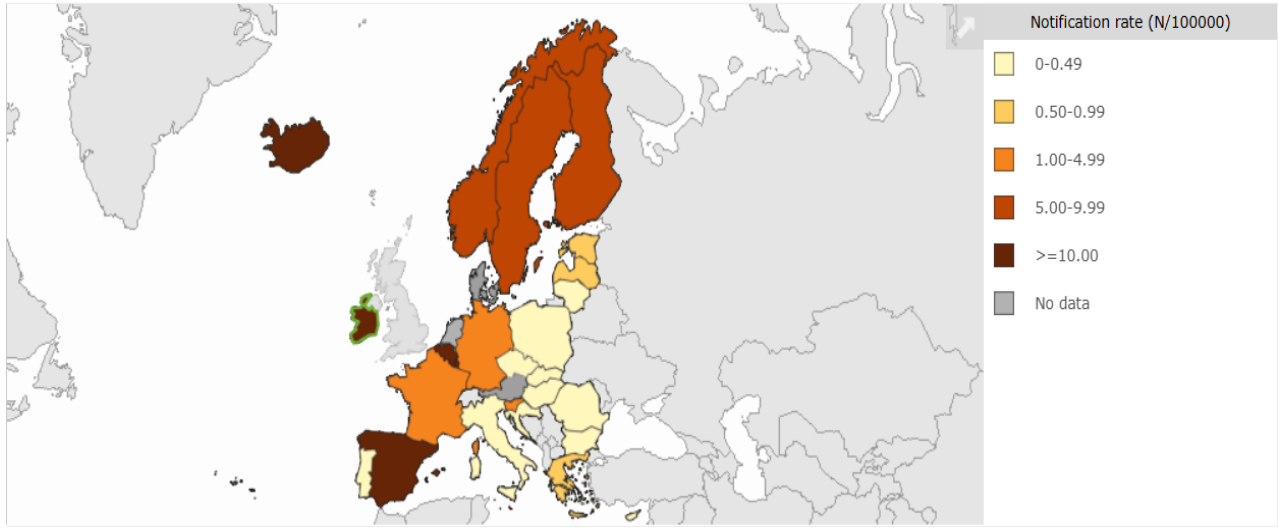
The number of general outbreaks notified was highest in 2023 (n=10) when compared to the period 2004-2022. The most common route of transmission reported in 2023 was person to person (n=7). Among these, 3 outbreaks were in childcare facilities and 2 outbreaks were in sporting activity/fitness settings. A travel related outbreak with 54 confirmed cases associated with travel to Salou in Spain was also reported in 2023.

(Further information is available here: Cryptosporidiosis reported in returning travellers. Epi Insight Vol 24 Issue 8 November 2023)

Cryptosporidiosis in the EU/EEA, 2007-2023

When compared to other EU/EEA countries, Ireland's notification rate has been higher than the EU/EEA average since 2007 and remained above the EU/EEA average in 2023 (3.45 per 100,000 population) ranking 3rd highest in the EU/EEA in 2023.





Data source: ECDC Surveillance Atlas of Infectious Diseases 10/01/2025

Cryptosporidiosis in Ireland, 2023 summary

- 870 cases of cryptosporidiosis notified
- Notification rate increased from 11.0/100,000 population in 2022 to 16.9/100,000 population in 2023
- CIR in 2023 was the highest recorded in recent years (second highest CIR in recent years was in 2021, CIR 16.4/100,000)
- Almost 40% of cases were under 5 years
- The highest number of cases were notified in springtime (March-May), corresponding to peak lambing/calving season, where most cases were indigenous. A second peak was seen in September, following an increase in the proportion of travel-related cases, including cases linked to the travel related outbreak associated with travel to Salou in Spain.
- The number of general cryptosporidiosis outbreaks reported in 2023 was high, compared to previous years
- When compared to other EU/EEA countries, Ireland's notification rate was above the EU/EEA average (3.45 per 100,000 population) and ranked 3rd highest in 2023
- Ireland's cryptosporidiosis notification rate increased in 2023. Other EU/EEA countries observed an increase in 2023 when compared to 2022 (particularly Belgium, Luxembourg, Iceland & Spain). [1]

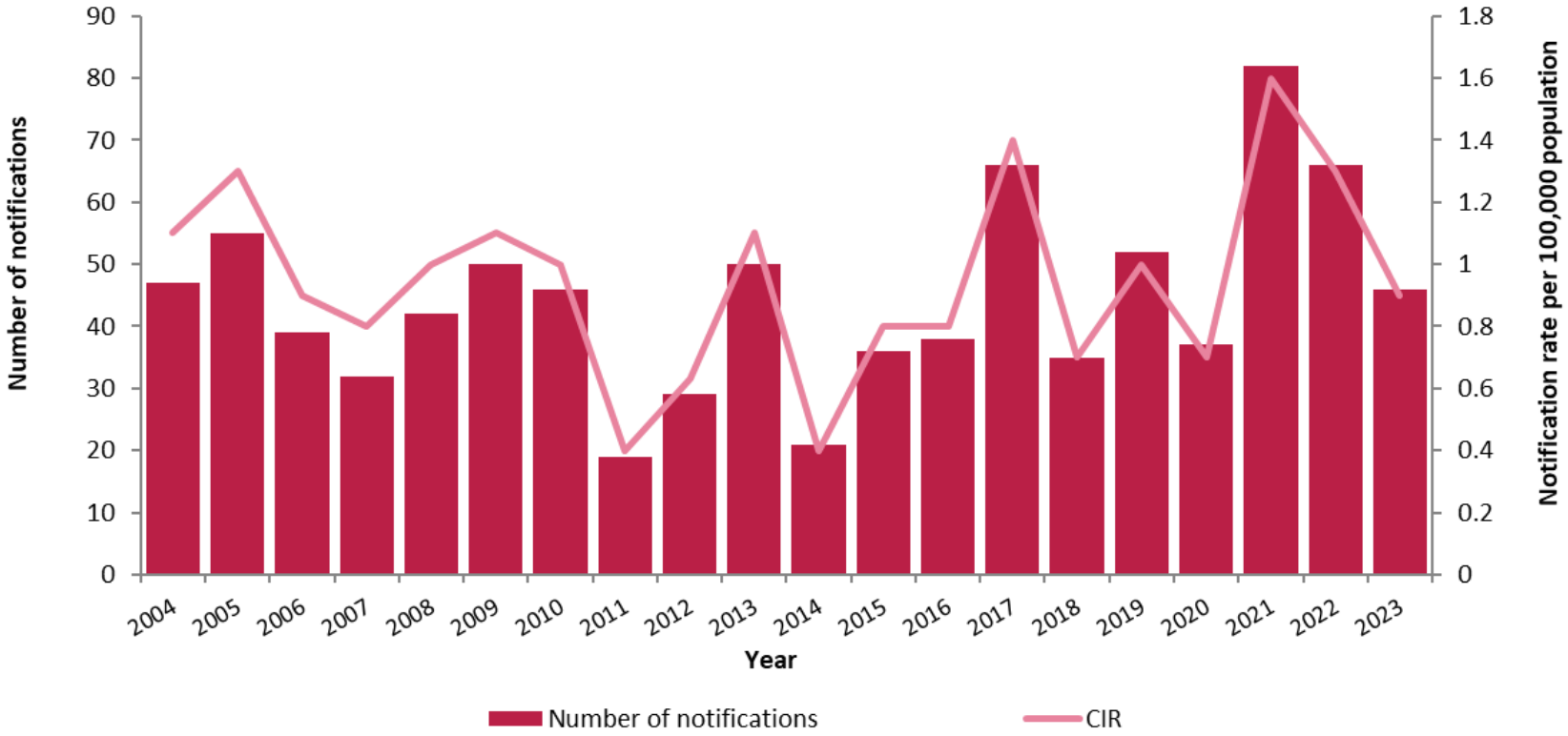
1. Communicable disease threats report. Week 43, 22–28 October 2023. Available at: https://www.ecdc.europa.eu/sites/default/files/documents/communicable-disease-threats-report-week-43-2023.pdf

Hepatitis A in Ireland

Hepatitis A in Ireland

- Hepatitis A is an acute self-limiting disease of the liver caused by the hepatitis A virus.
- The most common symptoms are fever, loss of appetite and nausea, followed within a few days by jaundice. Disease severity varies, with some people having a relatively mild disease course lasting 1-2 weeks and others having more severe and prolonged symptoms lasting several months. Many infected children are asymptomatic. Chronic infection does not occur.
- The virus is shed in the faeces of infected people and is primarily spread from person to person through the faecal-oral route (via hands or other contaminated objects or through food or water that has been contaminated with the faeces of an infected person, or directly through oral-anal contact).
- Hepatitis A infection occurs worldwide, but the risk of infection varies with levels of sanitation and personal hygiene. Ireland is considered a low incidence country. A high proportion of cases notified in Ireland have a history of recent travel, or are part of small family outbreaks, often including an index case who has travelled outside Ireland.
- Occasionally, larger outbreaks involving extended family members and wider community contacts are reported. These are often associated with person-to-person spread within family and community networks over an extended period of time rather than a common food source. Food and waterborne outbreaks can also occur, in addition to outbreaks in childcare facilities and outbreaks in gay and bisexual men and other men who have sex with men (gbMSM).
- There is a safe, effective vaccine for hepatitis A and immunisation is recommended for travellers to endemic areas, household, sexual and other close contacts of cases and other people at higher risk of infection, or more severe disease, such as people who inject drugs (PWID), people with chronic liver disease and gbMSM.
- For more information on risk factors and precautions please see the Hepatitis A Factsheet on the HPSC website.

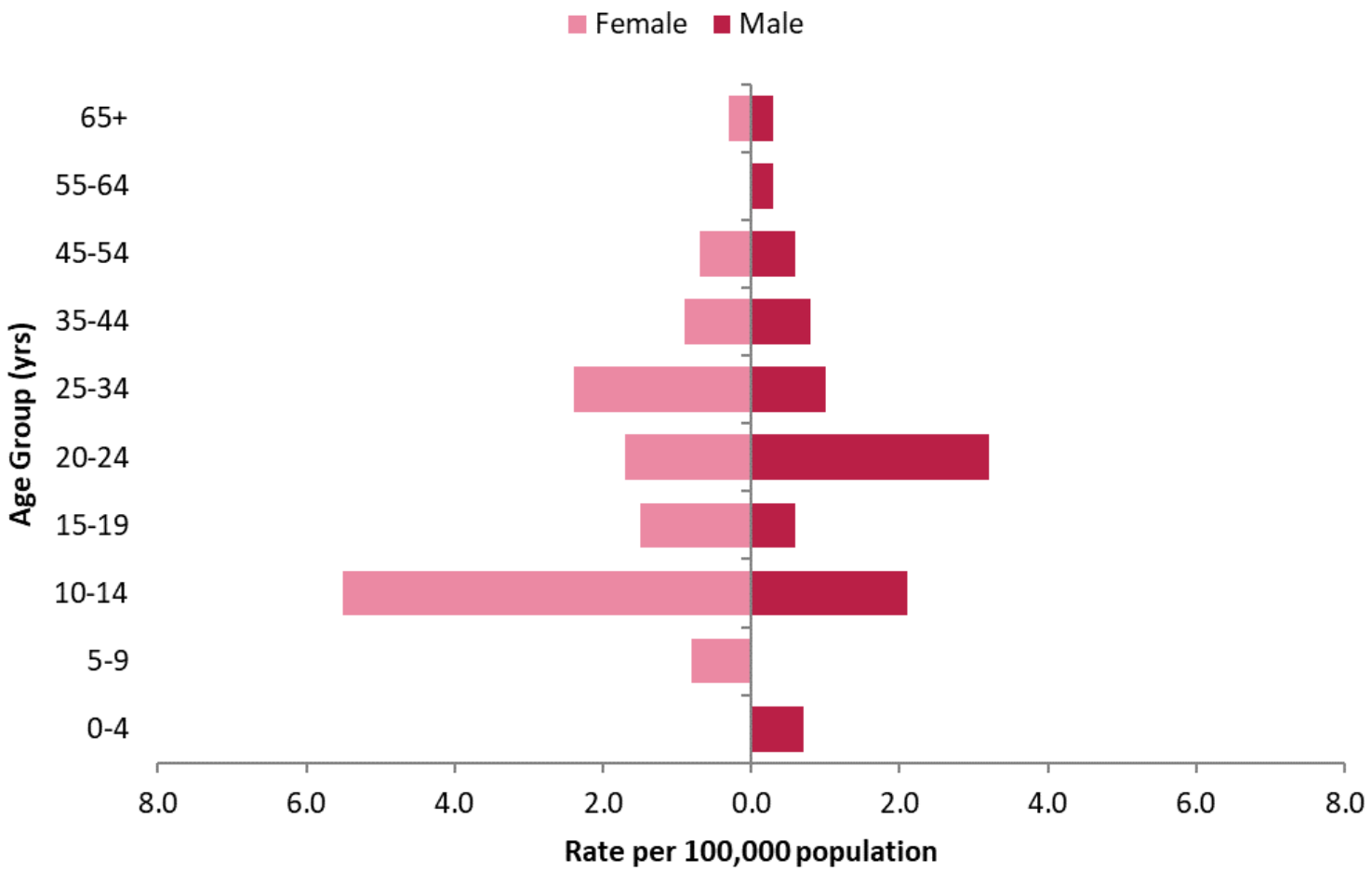
Hepatitis A in Ireland: trends, 2004-2023



In 2023, 46 Hepatitis A cases were notified, giving a CIR of 0.9/100,000 which is a decrease compared to 2022 (1.3/100,000).
The CIR in 2021 was higher than expected due to two large outbreaks associated with the Irish travelling community.

Data source: Computerised Infectious Diseases Reporting System (CIDR) 27/09/2024

Hepatitis A in Ireland: age and sex, 2023



In 2023 the highest incidence rate was in the 10-14 year age group (3.2/100,000 population) and the 20-24 year age group (2.3/100,000 population).

Overall the highest incidence was in females aged between 10-14 years (5.5/100,000 population)

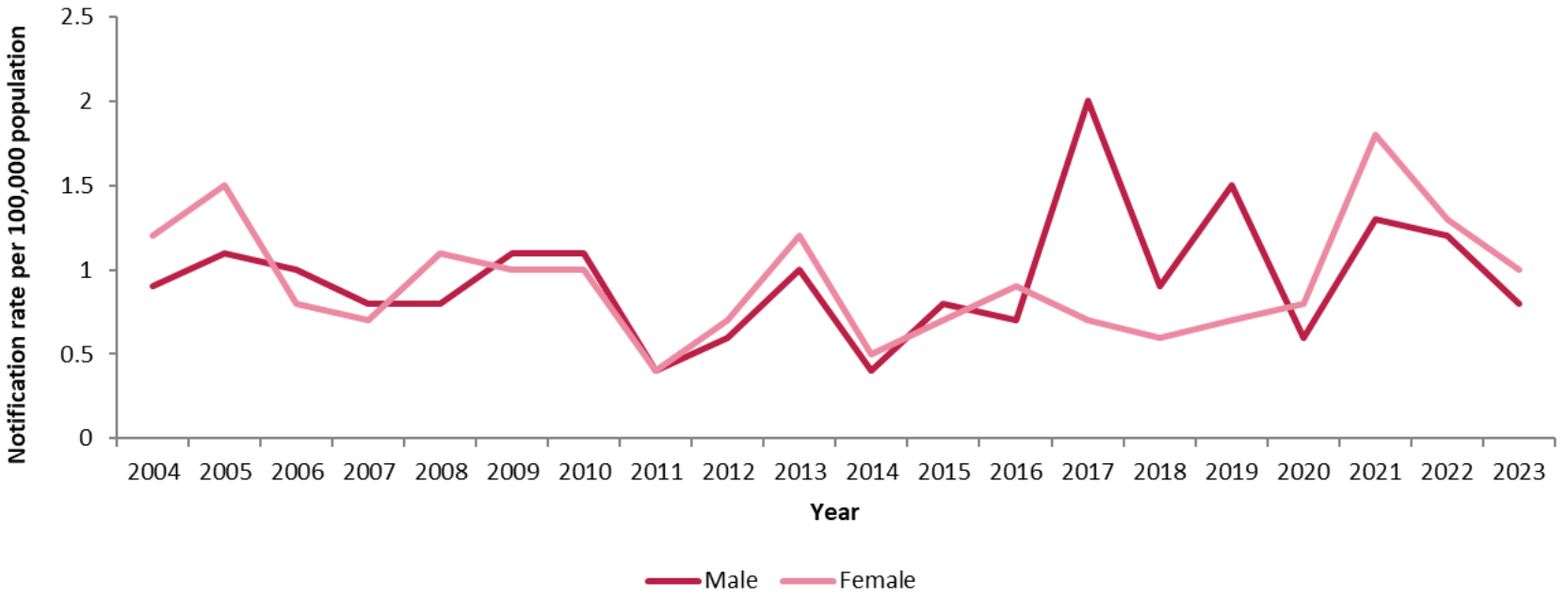
Data source: Computerised Infectious Diseases Reporting System (CIDR) 30/09/2024

Hepatitis A in Ireland: geographical distribution, 2021-2023

The CIR for Hepatitis A decreased in all regions in 2023 except in the SouthWest region where the CIR increased(1.5/100000) when compared to 2022 (0.4/100000). The SouthWest region also had the highest CIR in 2023, followed by Dublin & Midlands (1.3/100,000) and Dublin & NorthEast (1.2/100,000).

Data source: Computerised Infectious Diseases Reporting System (CIDR) 30/09/2024

Hepatitis A in Ireland: gender, 2004-2023

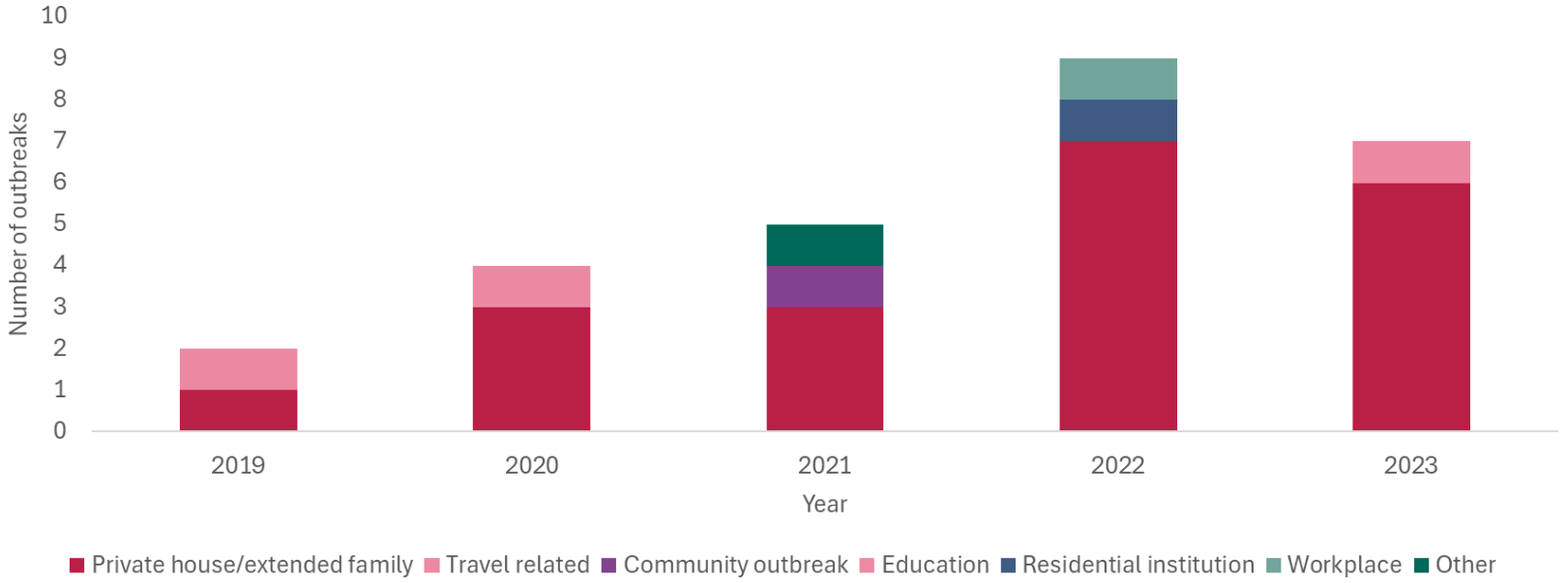


In 2023, the CIR was 1.0/100,000 population for females and 0.8/100,000 population for males. Incidence rates are generally similar for males and females, except in 2017 when there was a large outbreak among gbMSM. Higher than usual numbers of cases were also identified among gbMSM in 2018 and 2019.

Data source: Computerised Infectious Diseases Reporting System (CIDR) 30/09/2024

Hepatitis A in Ireland: overview of cases and outbreaks, 2019-2023

Description	2019	2020	2021	2022	2023	2019 -2023
Travel related case or associated with travel related outbreak	15	13	12	22	24	**86**
Sporadic case	9	9	14	16	13	**61**
Case in, or part of outbreak associated with, the travelling community	0	11	50	1	0	**62**
Part of family/extended family outbreak	17	2	4	24	9	**56**
gbMSM case or part of outbreak in gbMSM community	8	2	0	0	0	**10**
Part of other outbreak	3	0	2	3	0	**8**
Total	**52**	**37**	**82**	**66**	**46**	**283**



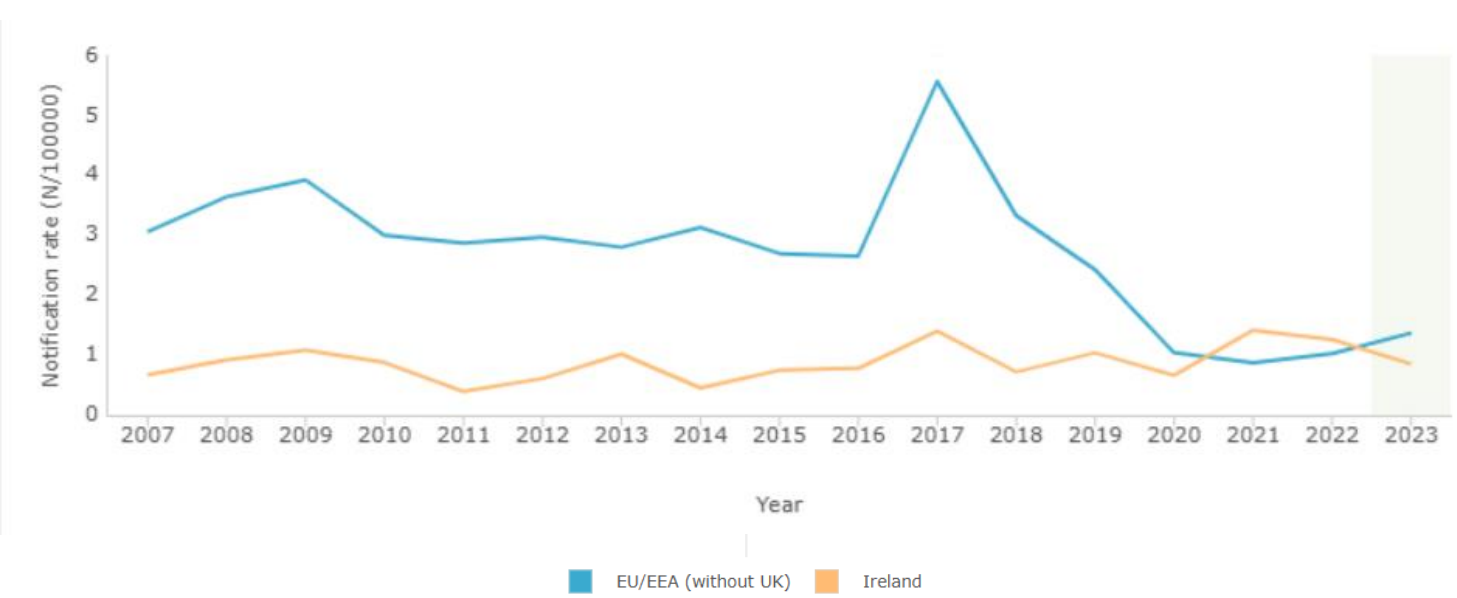
Data source: Computerised Infectious Diseases Reporting System (CIDR) 30/09/2024

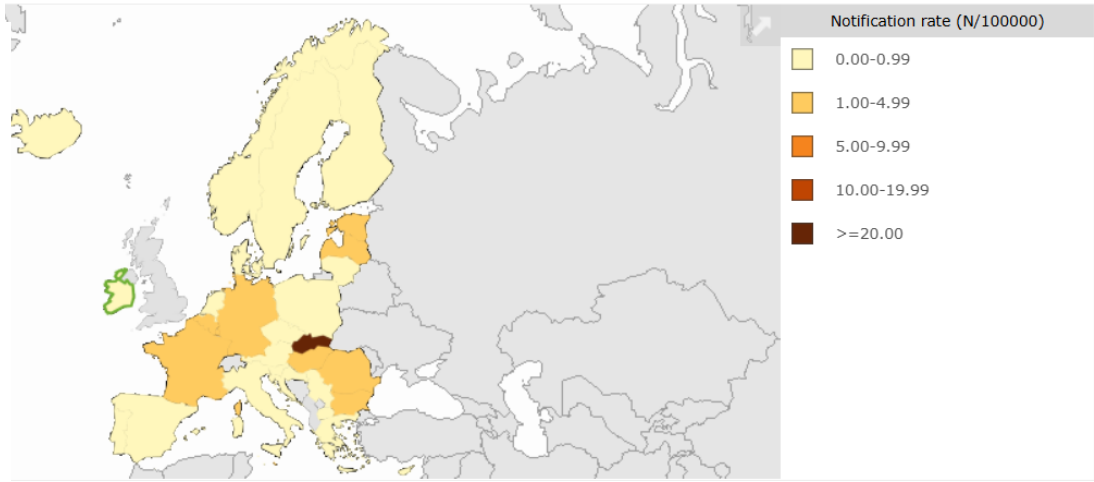
In 2023, 52% of cases were travel related or associated with a travel related outbreak.

There were seven Hepatitis A outbreaks in 2023 compared to nine in 2022. Six outbreaks were in private house/extended family settings (person to person transmission) and one outbreak was travel related (transmission mode unknown). In total 13 people associated with these seven outbreaks were ill (range 2-3 people ill).

Hepatitis A in the EU/EEA, 2007-2023

In 2023, the Hepatitis A notification rate in Ireland was slightly lower than the EU/EEA average notification rate (1.37/100,000) and was the 13th highest in Europe. The Hepatitis A notification rate has been below the EU/EEA average since 2007 except in 2021 and 2022 when the notification rate was higher than expected due to two large outbreaks associated with the Irish travelling community and one extended family outbreak.





Data source: ECDC Surveillance Atlas of Infectious Diseases 21/01/2025

Hepatitis A in Ireland, 2023 summary

- 46 cases of Hepatitis A notified in 2023.
- Notification rate decreased from 1.3/100,000 in 2022 to 0.9/100,000 population in 2023
- The CIR was slightly higher in females (1.0/100,000 population) when compared to males (0.8/100,000) in 2023
- In 2023 the highest CIRs were in younger age groups, in particular the 10-14 year age group (3.2/100,000 population) and the 20-24 year age group (2.3/100,000 population).
- There were seven Hepatitis A outbreaks notified in 2023, 6 were located in private households/extended family and one was a travel related outbreak
- When compared to other EU/EEA countries, Irelands notification rate was below the EU/EEA average (1.37 per 100,000 population) and ranked 13th highest in 2023.

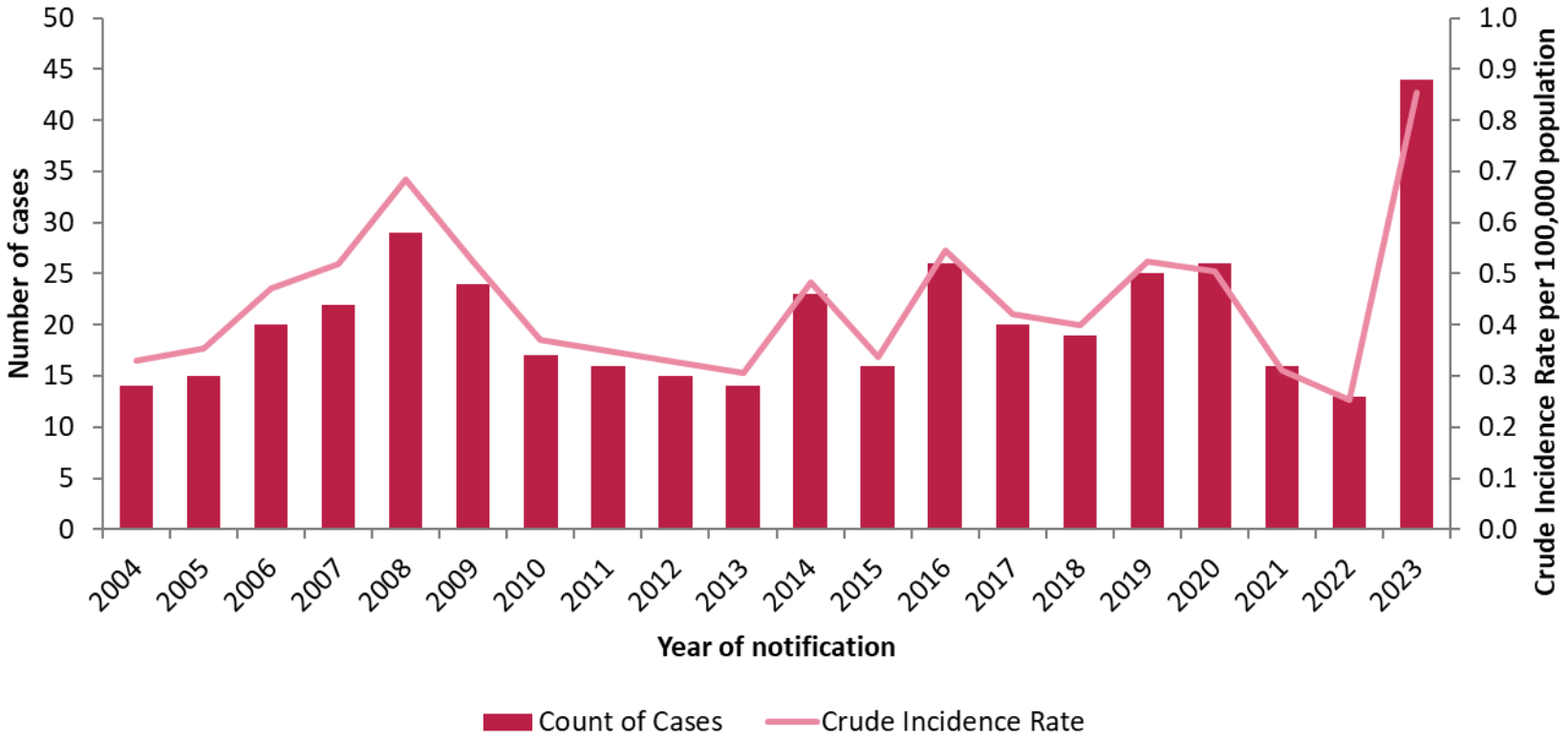
Leptospirosis in Ireland

Leptospirosis in Ireland

- Leptospirosis is a bacterial infection frequently found both in domestic and wild animals which can spread to humans. Mild cases present as a flu-like illness, with a persistent and severe headache. However more severe disease can develop with meningitis and occasionally with liver and kidney failure. This can be fatal in a small proportion of cases.
- Leptospirosis in Ireland can be acquired from contact with rats or items contaminated with rat urine. A milder form can also be acquired from contact with cattle or dogs. Infected urine or water contaminated with urine can be found in sewers, ditches, ponds, canals and slow-flowing rivers and riverbanks. High risk water includes stagnant, dirty-looking or obviously polluted fresh water found in ditches, drains, ponds, lakes or rivers. Sea water poses less risk.
- People at greatest risk of acquiring leptospirosis include those who fish, swim or use water for other recreational purposes. This includes people who engage in outdoor pursuits that brings them in contact with at-risk water such as canoeing, hiking, pot-holing or golfing. Occupations at risk include veterinary surgeons, farmers, meat inspectors, butchers, abattoir and sewer workers.

For more information on risk factors and precautions please see the Leptospirosis Fact Sheet on the HPSC website.

Leptospirosis in Ireland: trends, 2004-2023



There were 44 cases of leptospirosis notified in Ireland in 2023 this is an increase of 238% from 2022.

The CIR of leptospirosis in Ireland in 2023 was 0.9 per 100,000 population, this is the highest notification rate recorded since 2004 with the previous highest rate in 2008.

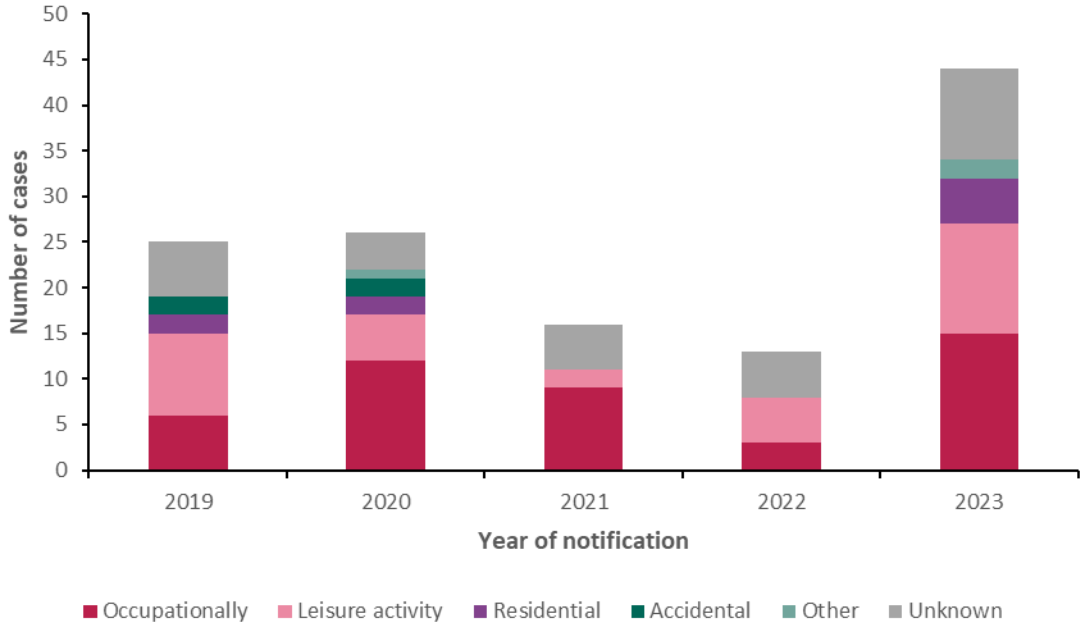
Data source: Computerised Infectious Diseases Reporting System (CIDR) 21/10/2024

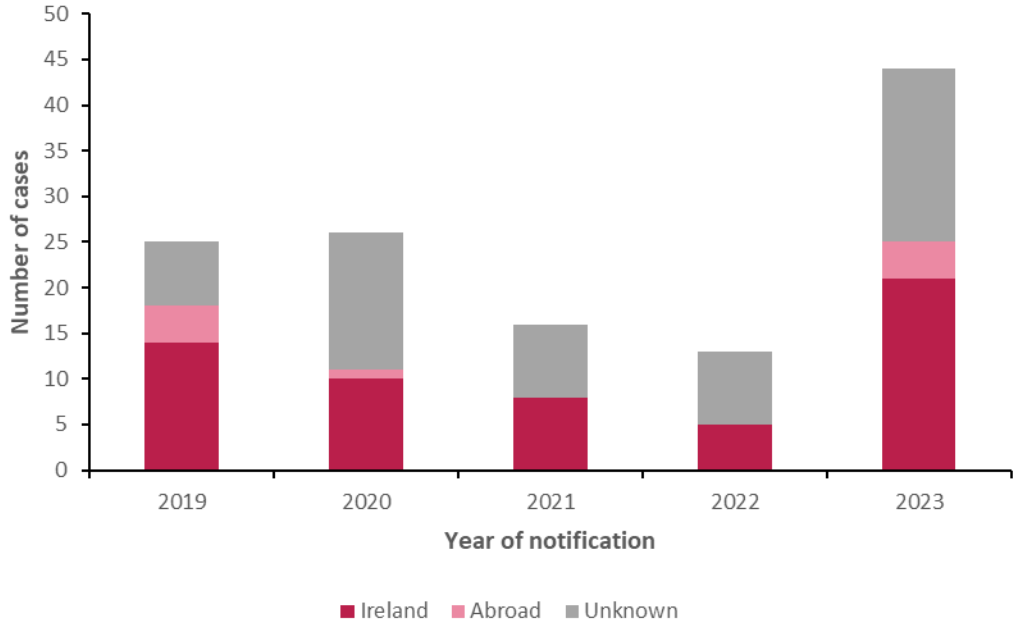
Leptospirosis in Ireland: summary of cases, 2019 - 2023

	2019	2020	2021	2022	2023
Total cases	**25**	**26**	**16**	**13**	**44**
Male cases	20	20	15	9	33
Female cases	5	6	1	4	11
M:F Ratio	4.0	3.3	15.0	2.3	3.0
Crude Incidence Rate (per 100,000)	**0.5**	**0.5**	**0.3**	**0.3**	**0.9**
Median age (range)	**31 (12-76)**	**46 (18-68)**	**39 (20-70)**	**44 (18-75)**	**42 (6-72)**
Hospitalised cases	**20**	**14**	**12**	**8**	**31**
Percent hospitalised	80.0%	53.9%	75.0%	61.5%	70.5%

Data source: Computerised Infectious Diseases Reporting System (CIDR) 21/10/2024

Leptospirosis in Ireland: summary of cases, 2019 - 2023





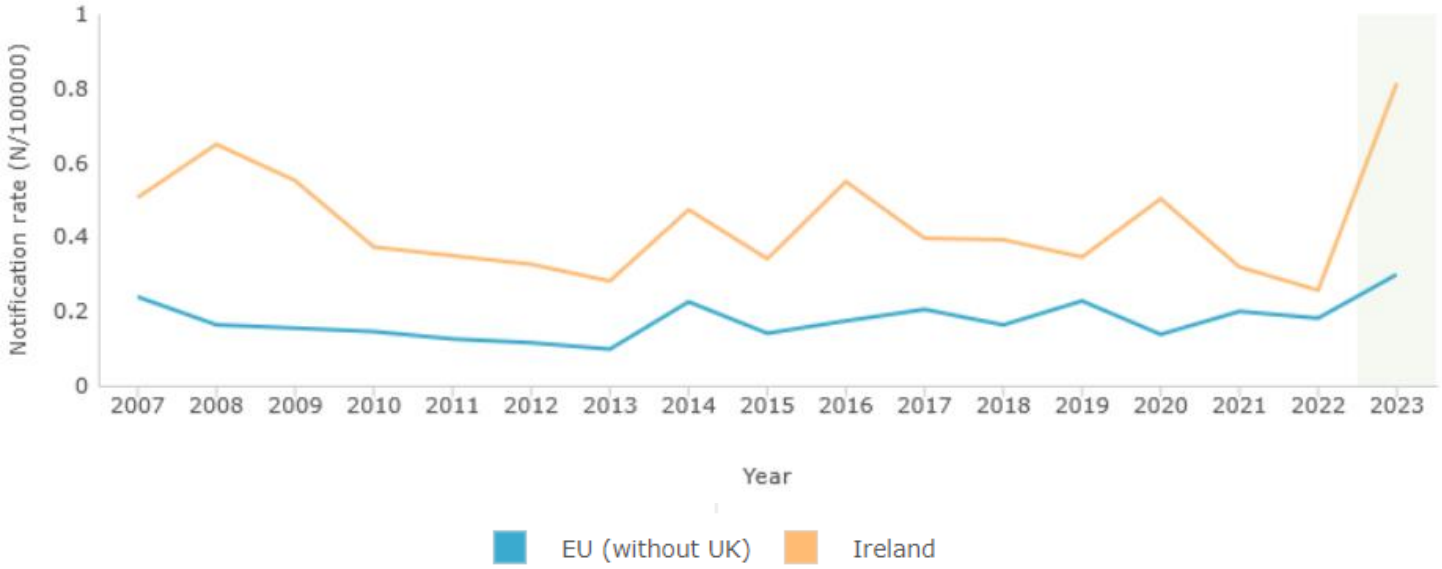
- The most commonly reported transmission sources in 2023 were occupational activities, this is similar to 2020 and 2021, whereas leisure activities were more commonly reported in 2019 and 2022
- Where data on country of infection were available, most cases of leptospirosis were acquired domestically

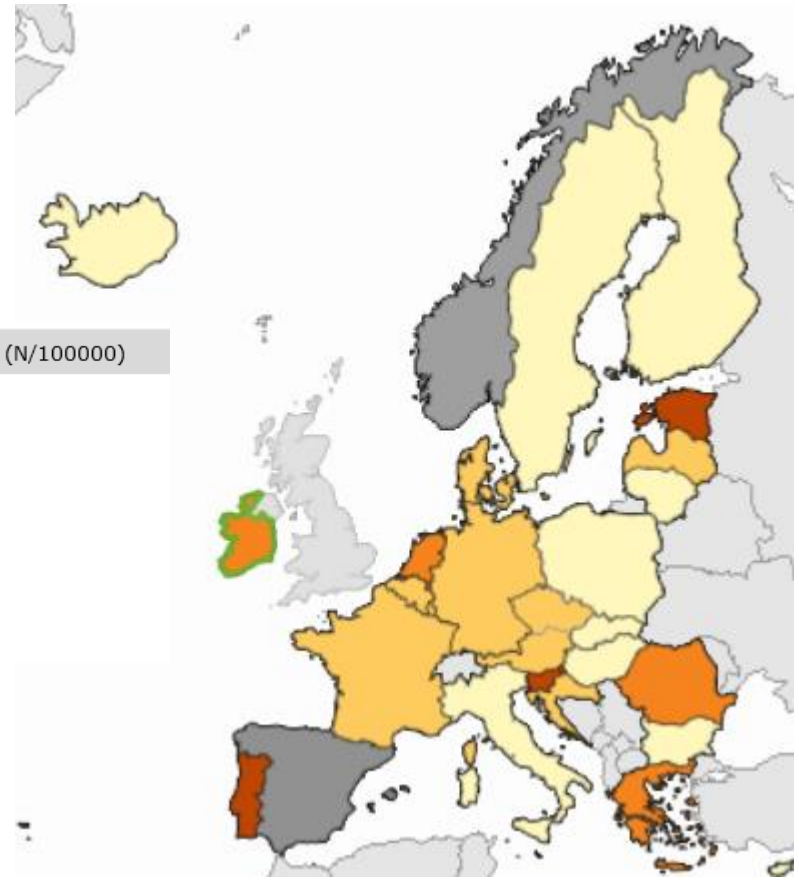
*Leisure activities included activities such as swimming and canoeing in slow moving rivers and lakes, occupational activities included exposure to rats or sewage/faeces during routine work

Data source: Computerised Infectious Diseases Reporting System (CIDR) 21/10/2024

Leptospirosis in the EU/EAA, 2007-2023

Leptospirosis notification rates in Ireland have been consistently higher than the EU average between 2007 and 2023. In 2023, the CIR of leptospirosis in Ireland in 2023 was 0.9 per 100,000 population compared to the EU average which was 0.3 per 100,000 population.





Data source: ECDC Surveillance Atlas of Infectious Diseases 07/01/2025

Leptospirosis in Ireland, 2023 summary

- 44 cases of leptospirosis notified
- Notification rate increased from 0.3/100,000 in 2022 to 0.9/100,000 population in 2023
- Occupational exposures were the most common likely source of transmission in 2023 compared to 2022 when leisure activities were the most reported likely source of transmissions. However, due to data completeness, caution is required when interpreting these data.
- Where data on country of infection were available, most cases of leptospirosis were acquired domestically
- When compared to other EU/EEA countries, Ireland's notification rate was above the EU/EEA average (0.3 per 100,000 population) and ranked 6th highest in 2023
- The increased leptospirosis notification rate in Ireland in 2023 was investigated and no specific cause was identified

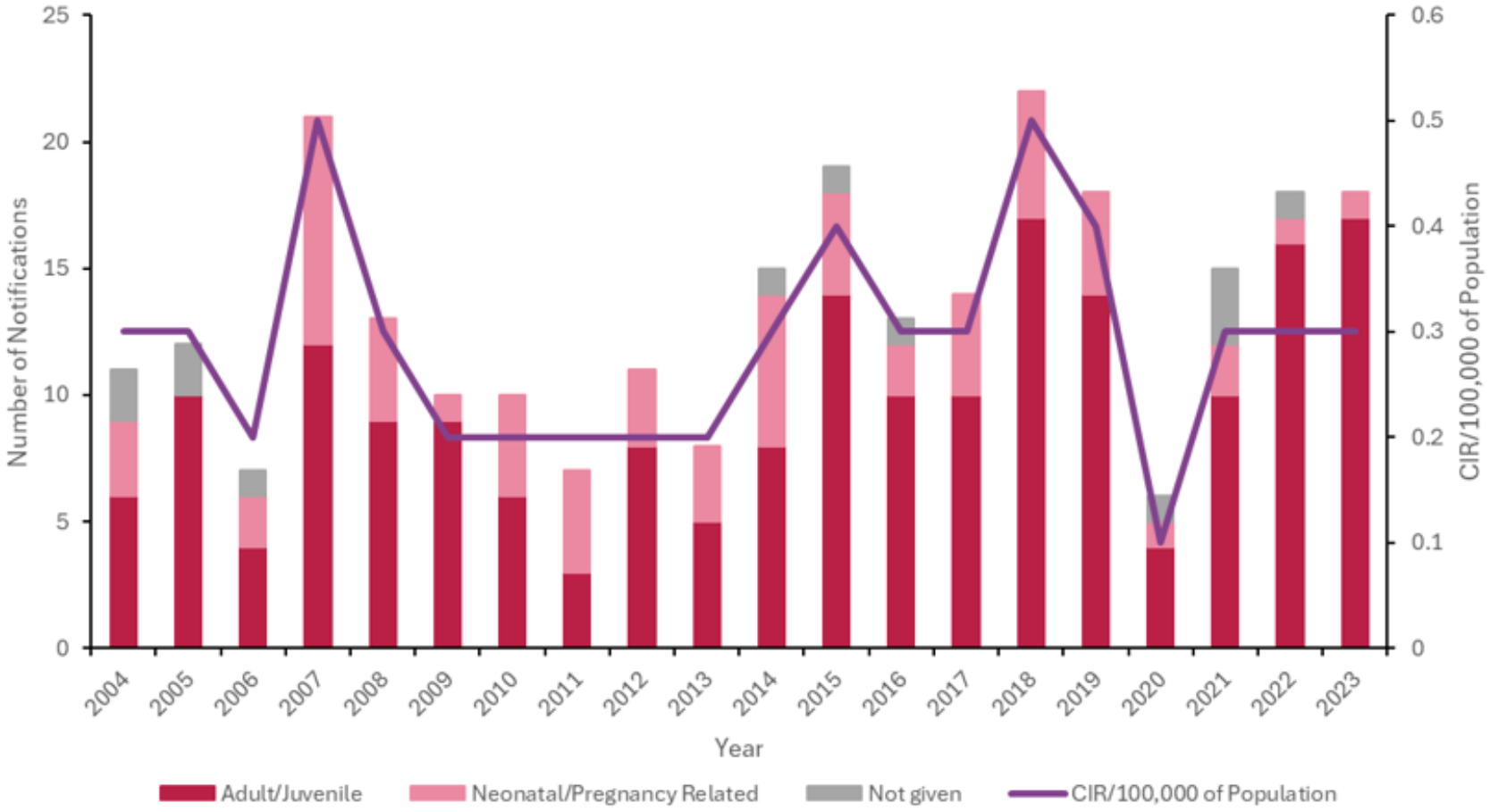
Listeriosis in Ireland

Listeriosis in Ireland

- Listeriosis is a serious infection usually caused by eating food (raw, chilled and ready to eat foods or processed foods) and unpasteurised milk and dairy products contaminated with the bacterium *Listeria monocytogenes*
- Healthy individuals infected with *L. monocytogenes* typically have a self-limiting gastrointestinal infection with fever and diarrhoea. However, in neonates, elderly people, and immunocompromised people, listeria can cause septicaemia and meningitis
- Pregnant women are also at risk: although illness may be mild for the woman, infection during pregnancy can lead to premature labour, meningitis in the newborn or miscarriage
- In Ireland the case definition for listeriosis does not include symptoms of gastroenteritis and includes only cases of invasive listeriosis
- Although the number of cases of listeriosis notified annually in Ireland is small, the high rate of death associated with this infection makes it a significant public health concern

For more information on risk factors and precautions please see the Listeriosis Fact Sheet on the HPSC website.

Listeriosis in Ireland: trends, 2004-2023



There were 18 notified cases of listeriosis in 2023 giving a CIR of 0.3, unchanged from 2022. The CIR has been between 0.3 and 0.5/100,000 in recent years but dropped to 0.1 in 2020. The notification rate returned to pre-pandemic levels in 2021 and has remained stable since then.

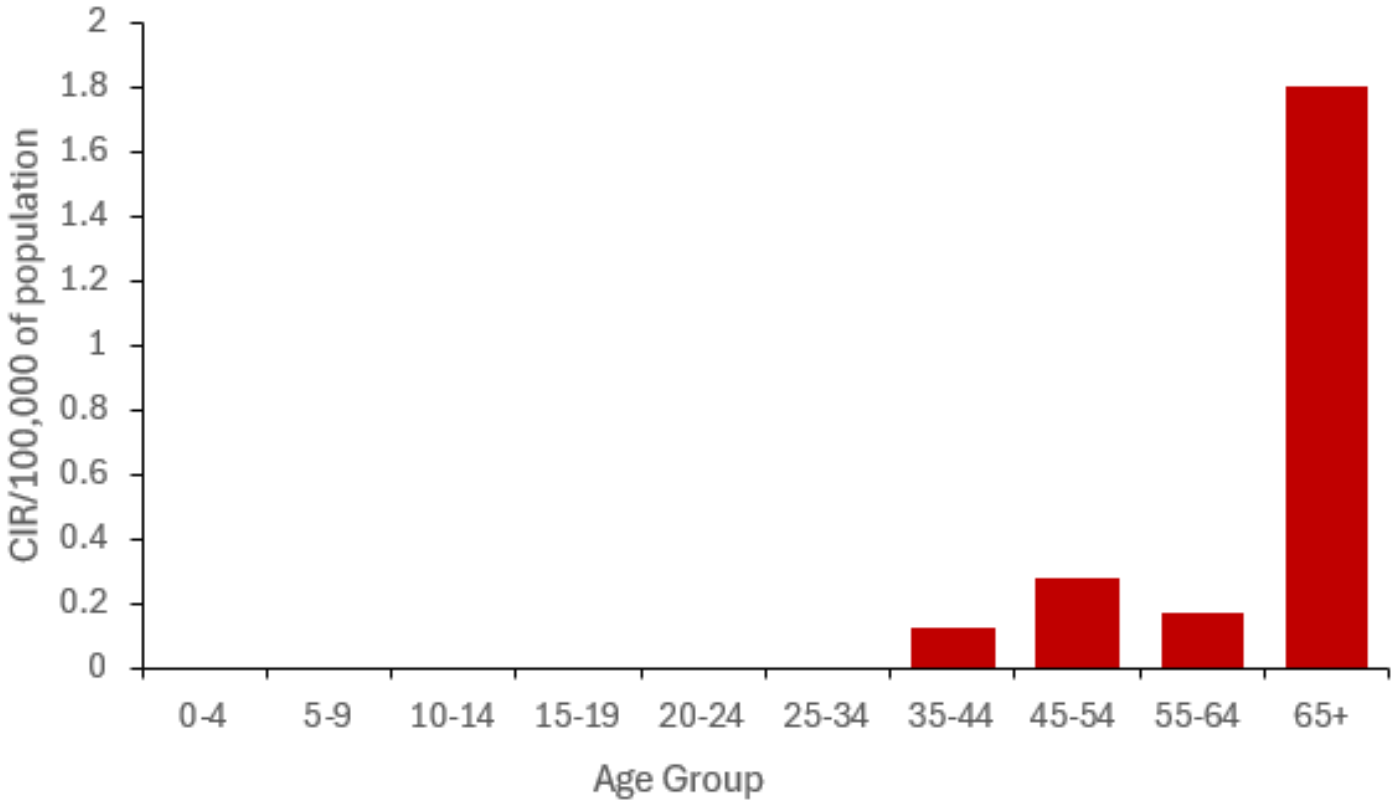
6% of notifications were pregnancy related in 2022 and 2023, reduced from 17% in 2019 and 2020

Data source: Computerised Infectious Diseases Reporting System (CIDR) 29/09/2024

Listeriosis in Ireland: disease severity

- Of the 18 cases notified in 2023, 2 were A&E patients and 16 were hospital in-patients
- One person with listeriosis died
- In 2023 the principal diagnosis was reported in 6 of the 18 notified cases and these included: Meningitis (n=3), bloodstream infection (n=2), meningitis and bloodstream infection (n=1)
- Outcome for the one pregnancy related case was not specified

Listeriosis in Ireland: age specific incidence rates, 2023



Excludes cases where age was unknown (n=1)

Data source: Computerised Infectious Diseases Reporting System (CIDR) 26/09/2024

In 2023 the highest incidence of listeriosis occurred in persons aged greater than 65 years old. This is likely due to greater disease severity and higher testing rates in the over 65 years age group.

There were no cases of listeriosis notified in persons aged under 35 years in 2023.

Listeriosis in Ireland: Reference laboratory data, 2021- 2023

Serotype	2019	2020	2021	2022	2023
1/2	0	0	0	0	0
1/2a	4	2	3	2	4
1/2b	3	1	0	1	1
4b	9	2	5	6	5
Total	16	5	8	9	10

Specimen type	2019	2020	2021	2022	2023
Blood culture	14	5	4	8	8
CSF	2	0	3	1	0
Placental swab	0	0	0	0	1
Other	0	0	1	0	1
Total	16	5	8	9	10

Data source: Computerised Infectious Diseases Reporting system (CIDR) 30/09/2024 and National Salmonella, Shigella and Listeria Reference Laboratory

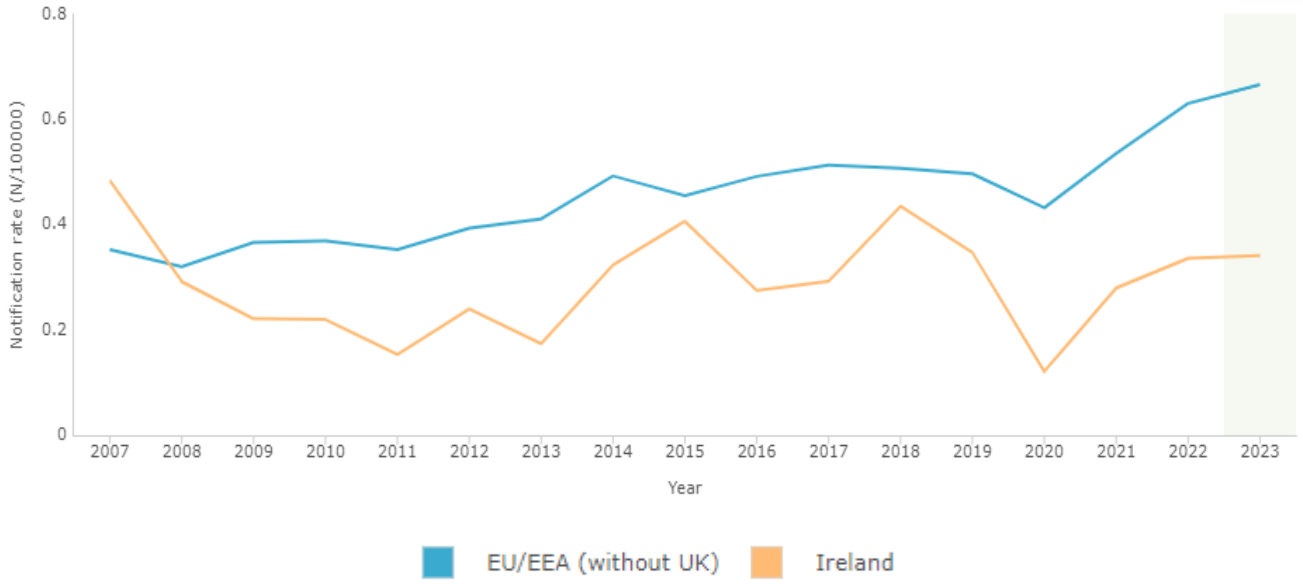
In 2023, isolates from 10 (56%) of the 18 notified cases were referred to the NSSLRL for further typing.

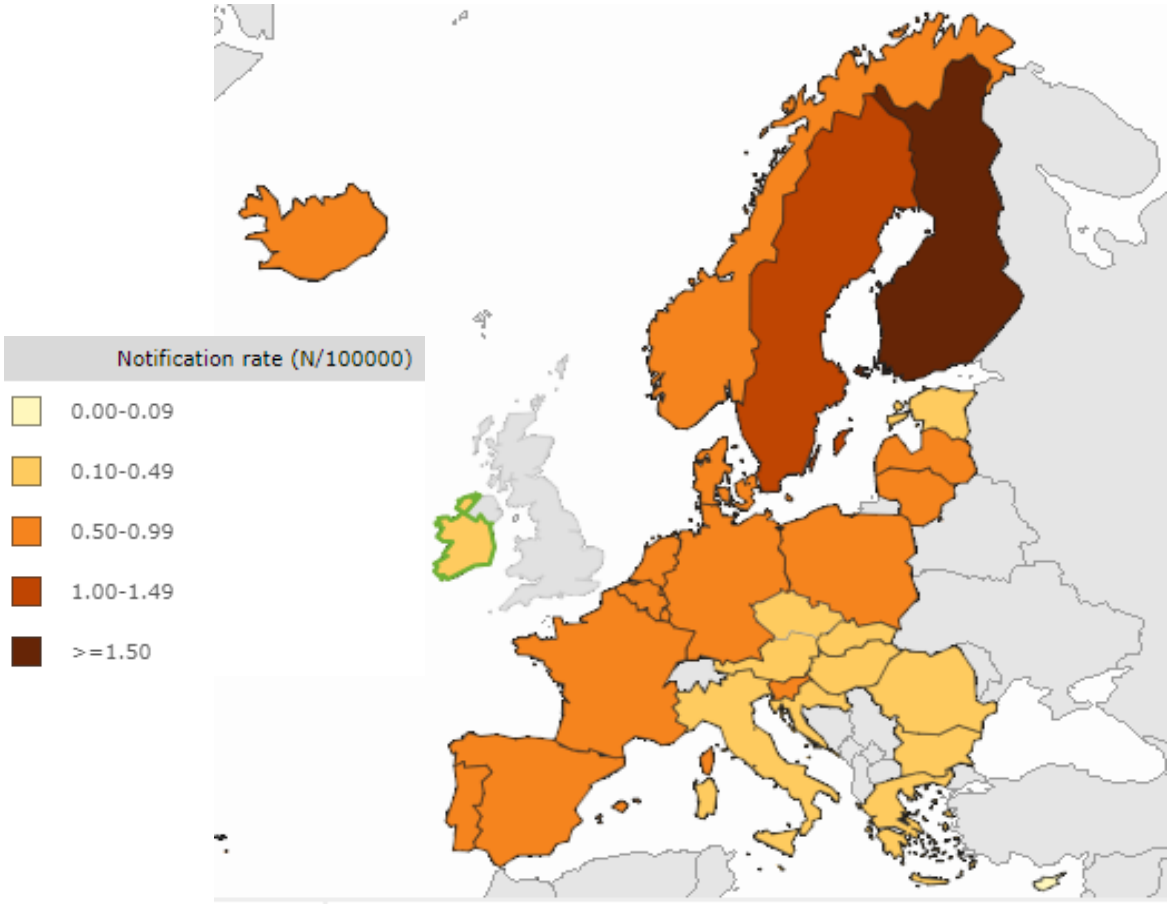
The serotype 4b continues to be the most common serotype reported in Ireland in 2019 (n=9), 2020 (n=2), 2021 (n=5), 2022 (n=6) and 2023 (n=5).

Most specimens tested by the reference lab in 2023 were blood culture specimens. This is in line with the previous 4 years.

Listeriosis in the EU/EAA, 2007-2023

Listeriosis notification rates in Ireland were higher than the EU average in 2007. However, after a decrease between 2007 and 2008, rates in Ireland have been and continue to be much lower than the EU average.





Data source: ECDC Surveillance Atlas of Infectious Diseases 30/09/2024

Listeriosis in Ireland, 2023 summary

- There were 18 cases of listeriosis notified in Ireland in 2023, a notification rate of 0.3/100,000 population, comparable to 2022
- In 2023 the highest incidence of listeriosis occurred in persons aged 65 years and older
- There was one pregnancy-related listeriosis notification in 2023, as in 2020 and 2022. Awareness of the risks of consuming unpasteurised dairy products and other high risk foods during pregnancy be a contributing factor to these low numbers.
- The serotype 4b remained the most common serotype found in Ireland in 2023
- Notification rates of listeriosis in Ireland in 2023 (0.34/100,000 of population) were approximately half the average notification rate in EU/EEA (0.67/100,000 of population)
- To assist public health detection and investigation of outbreaks and/or food incidents, referral of all *Listeria* isolates for further typing in the NSSLRL is encouraged

Norovirus infection in Ireland

Norovirus infection in Ireland

- Norovirus, also known as the “winter vomiting bug” is a common and very contagious virus causing symptoms of nausea, vomiting and watery diarrhoea.
- Symptoms begin around 12 to 48 hours after becoming infected, usually lasting only about one or two days. Some people (usually the very young or elderly) may become very dehydrated and require hospital treatment.
- Noroviruses are very contagious and can spread easily from person to person. Both faeces and the vomit of an infected person contain the virus and are infectious. Contaminated surfaces, objects or hands, as well as consumption of contaminated food or water, can lead to spread of the virus.
- Norovirus often causes outbreaks because it is spread so easily from person-to-person and can survive in the environment for a number of days.
- Outbreaks of norovirus are reported frequently anywhere that large numbers of people congregate. Healthcare settings (hospitals and nursing homes) tend to be particularly affected by outbreaks of norovirus.

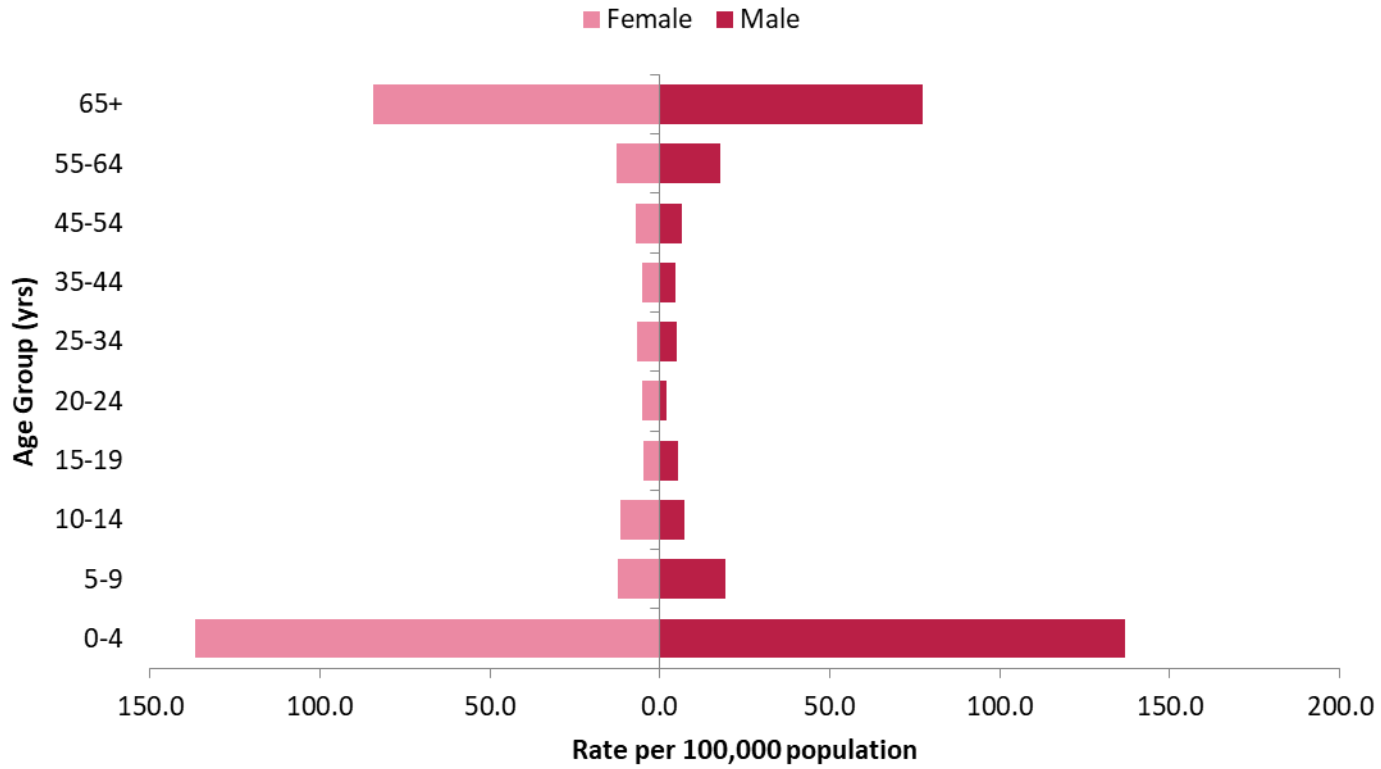
For more information on risk factors and precautions please see the Norovirus Fact Sheet on the HPSC website.

Norovirus in Ireland: trends, 2004-2023

1,364 cases of norovirus were notified in 2023, giving a CIR of 26.5/100,000 compared 19.2/100,000 in 2022. This was the highest notification rate since 2016.

Data source: Computerised Infectious Diseases Reporting System (CIDR) 27/09/2024

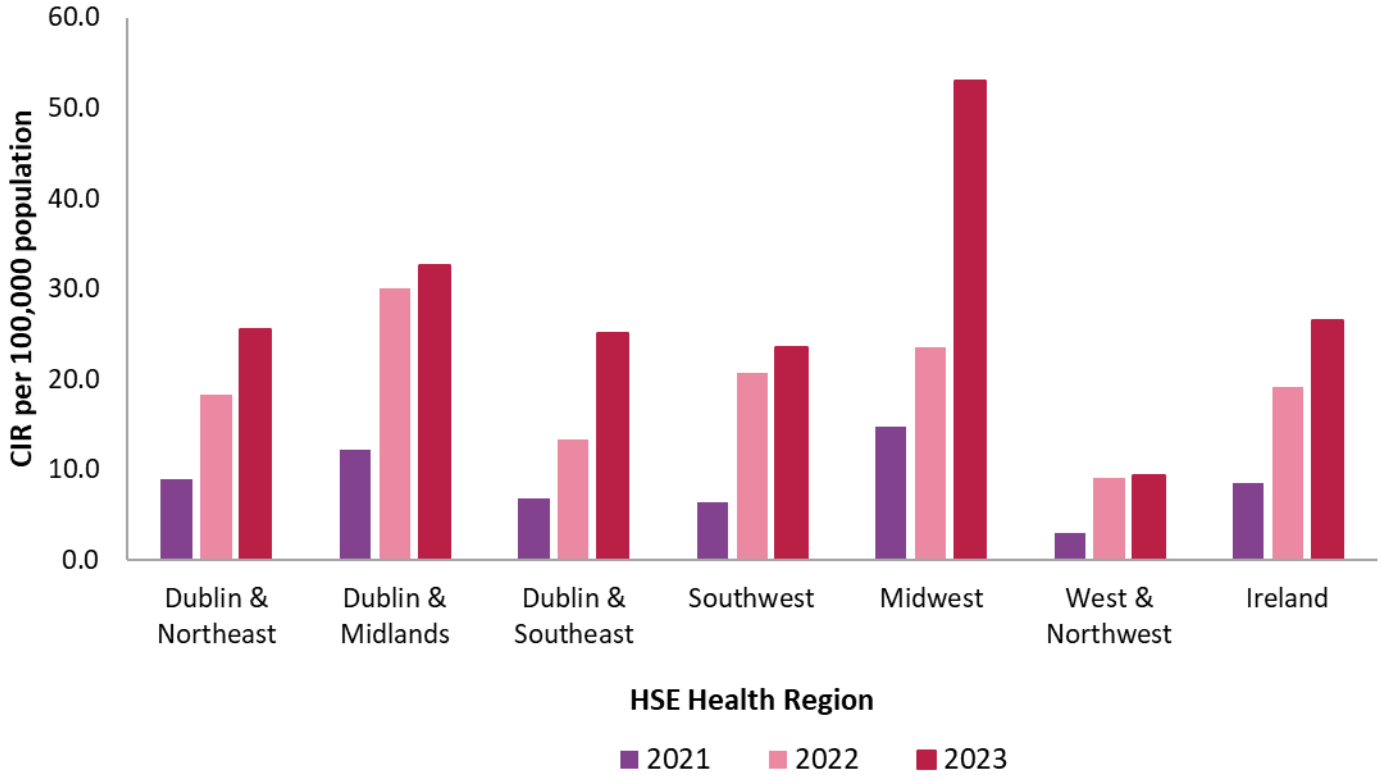
Norovirus in Ireland: age and sex distribution, 2023



Reported incidence rates were highest in those aged under 5 years and over 65 years in 2023 and were similar in males and females.

Data source: Computerised Infectious Diseases Reporting System (CIDR) 27/09/2024

Norovirus in Ireland: geographical distribution, 2021- 2023

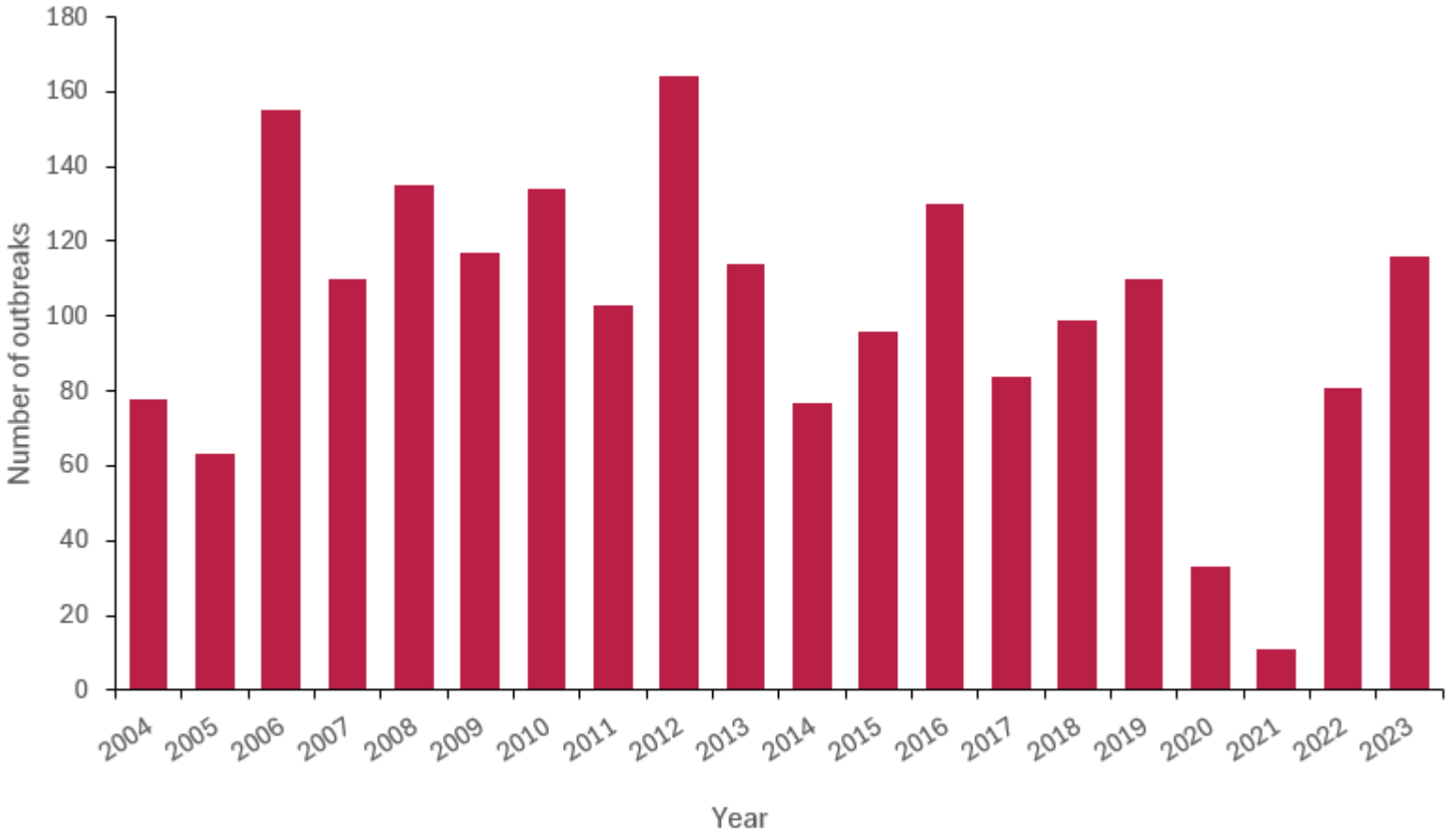


Incidence rates increased in almost all regions in 2023 when compared to 2022, particularly in the Midwest which had the highest incidence in 2023 (53.0/100,000)

*Trend data by HSE Health Region should be interpreted with caution due the re-organisation of HSE Healthboards to HSE Health Regions in 2022.

Data source: Computerised Infectious Diseases Reporting System (CIDR) 27/09/2024

Norovirus in Ireland: outbreak trends, 2004-2023



In 2023 the number of outbreaks increased, returning to pre-pandemic levels (n=116).

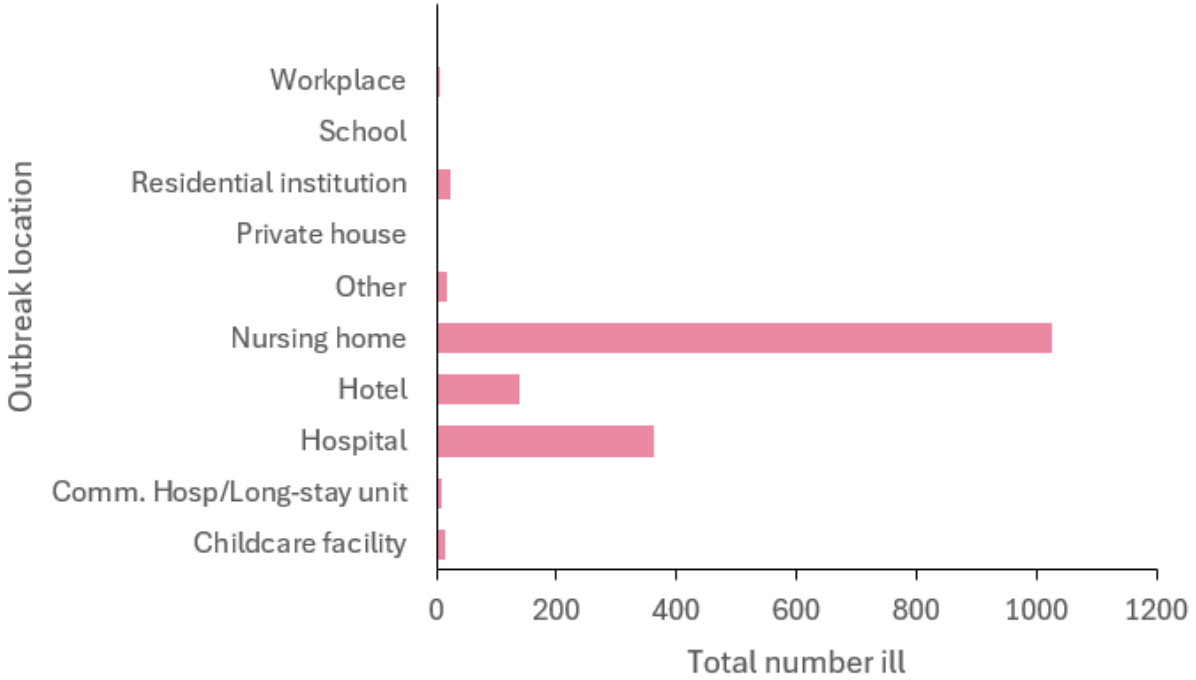
There were also 65 Acute infectious gastroenteritis (AIG) outbreaks in 2023, compared to 45 in 2022.

641 notifications (47%) linked to norovirus outbreaks notified in 2023.

Data source: Computerised Infectious Diseases Reporting System (CIDR) 29/09/2024

Norovirus in Ireland: outbreaks, 2023

Norovirus outbreak were reported most frequently in hospitals (47%; n=55, with a total of 361 people ill*) and nursing homes (41%; n=47 with a total of 1,026 people ill*) in 2023. The range for outbreaks notified in 2023 was 2-77 people ill with a median of 11 people ill per outbreak.



**Total number/people ill include people who do not have an individual notification*

Data source: Computerised Infectious Diseases Reporting System (CIDR) 29/09/2024

Norovirus in Ireland, 2023 summary

- 1,364 cases of norovirus notified in 2023
- Notification rate increased from 19.2/100,000 in 2022 to 26.5/100,000 population in 2023 and is comparable to the pre-pandemic notification rate for norovirus infection
- Over 47% of norovirus cases notified in 2023 were linked to an outbreak
- 116 norovirus outbreaks were notified in 2023, similar to the number of outbreak notified annually before the pandemic
- Norovirus outbreaks were most frequently reported in nursing homes and hospitals

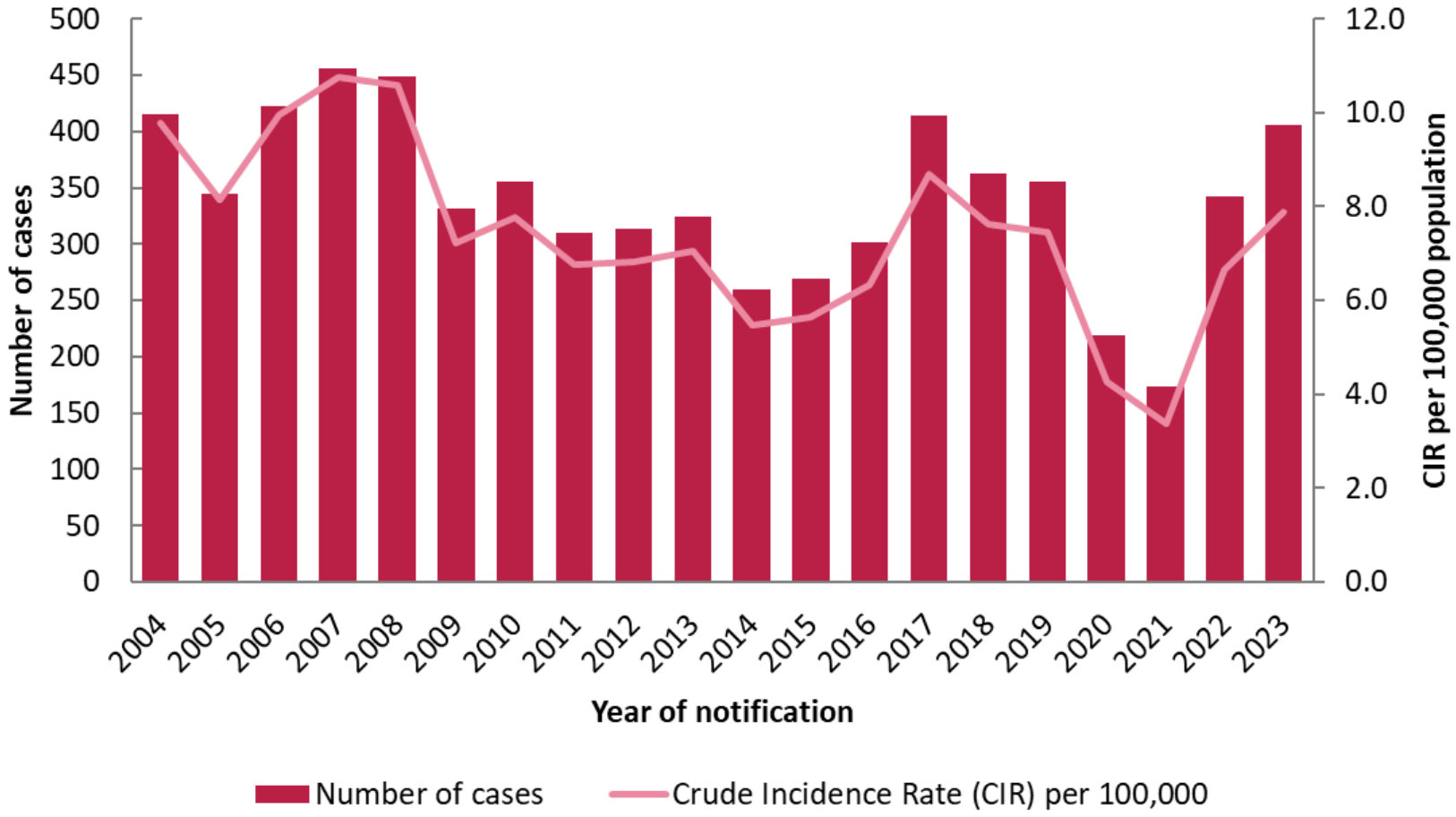
Salmonellosis in Ireland

Salmonellosis in Ireland

- Salmonellosis is a gastroenteric infection caused by bacteria from the genus *Salmonella*. *Salmonella enterica* is the species that causes human disease.
- Non-typhoidal serovars (NTS) of this species cause symptoms such as diarrhoea (sometimes bloody), fever, headache and abdominal pain. Symptoms usually last for less than a week and most people recover without treatment. However, symptoms can be severe enough to warrant hospital admission. The elderly, infants, and those with impaired immune systems are more likely to have a severe illness. In a minority of cases, salmonellosis can also become a systemic infection.
- The intestinal tract of wild and domestic animals and birds is a common reservoir for *Salmonella*, which can result in foodstuffs of both animal and plant origin becoming contaminated with faeces. Humans become infected through consumption of contaminated ready-to-eat or poorly-cooked foods.
- In Ireland, *Salmonella*-control measures are present at all stages of food supply, from production to distribution and consumption

For more information on risk factors and precautions please see the Salmonellosis Fact Sheet on the HPSC website.

Salmonellosis in Ireland: trends, 2004-2023

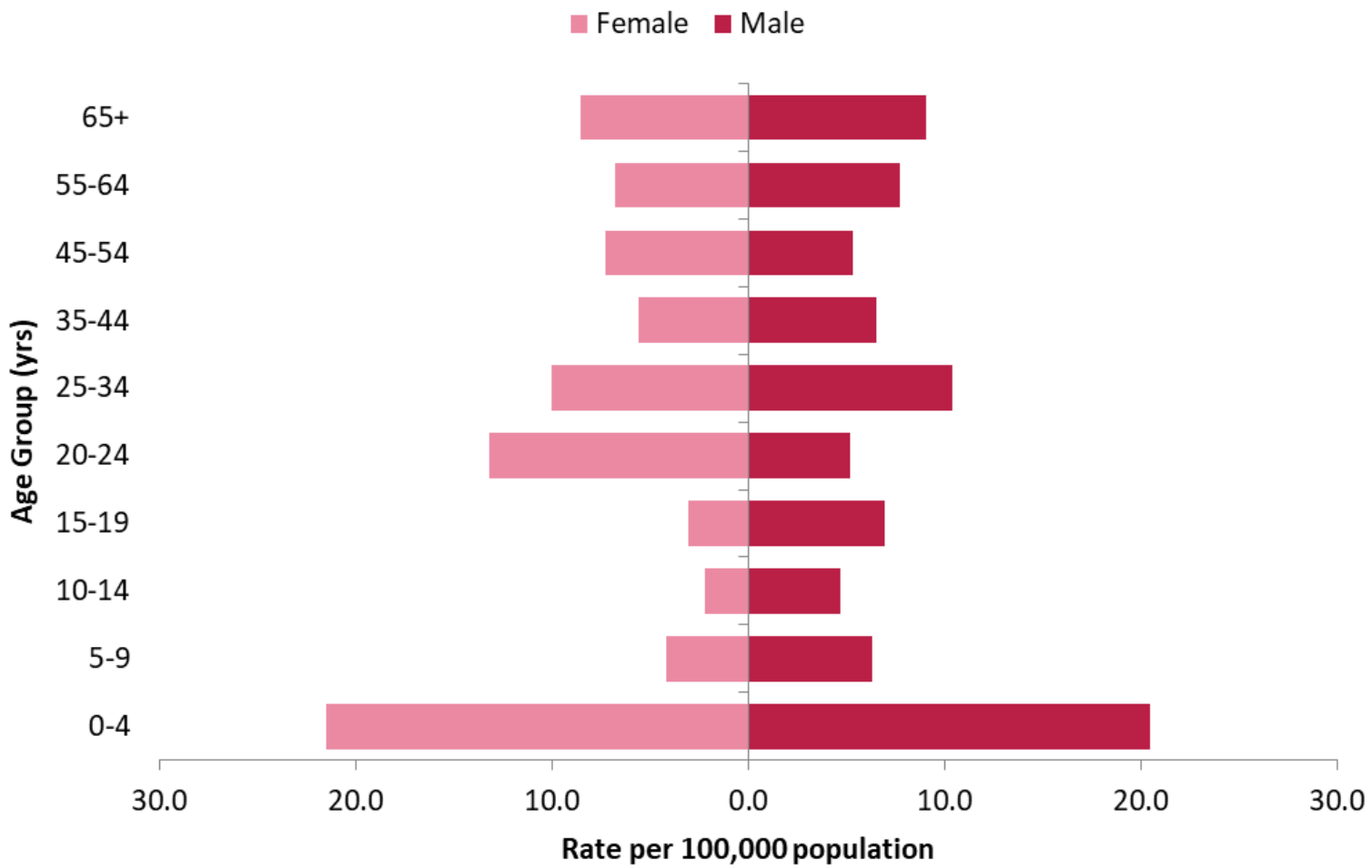


In 2023, 406 cases of salmonellosis were notified, giving a CIR of 7.9/100,000 population.

This was a 19% increase from the CIR in 2022 (6.6/100,000) and was the highest notification rate since 8.7/100,000 in 2017.

Data source: Computerised Infectious Diseases Reporting System (CIDR) 27/09/2024

Salmonellosis in Ireland: age and sex distribution, 2023



Excludes cases where age or sex were not reported (n=1).

Data source: Computerised Infectious Diseases Reporting System (CIDR) 21/10/2024

In 2023, 50% (n=203) of cases were female and 50% (n=203) were male.

The highest age-specific incidence rate was among 0-4 year olds (21.0/100,000), followed by 25-34 year olds (10.2/100,000).

This pattern is comparable to 2022 but the rate in children decreased slightly in 2023, compared to 2022, and increased slightly among adult age groups.

Salmonellosis in Ireland: geographical distribution, 2021-2023

Data source: Computerised Infectious Diseases Reporting System (CIDR) 21/10/2024

In 2023, the salmonellosis CIR increased in four out of six HSE regions, compared to 2022; the rates in Dublin & Northeast and in North & Northwest were largely unchanged.

The area reporting the highest incidence rate in 2023 was HSE Dublin & Midlands region (9.5/100,000), while HSE North & Northwest reported the lowest incidence in 2022 (6.2/100,000).

*Trend data by HSE Health Region should be interpreted with caution due the re-organisation of HSE Healthboards to HSE Health Regions in 2022.

Salmonellosis in Ireland: disease severity, 2023

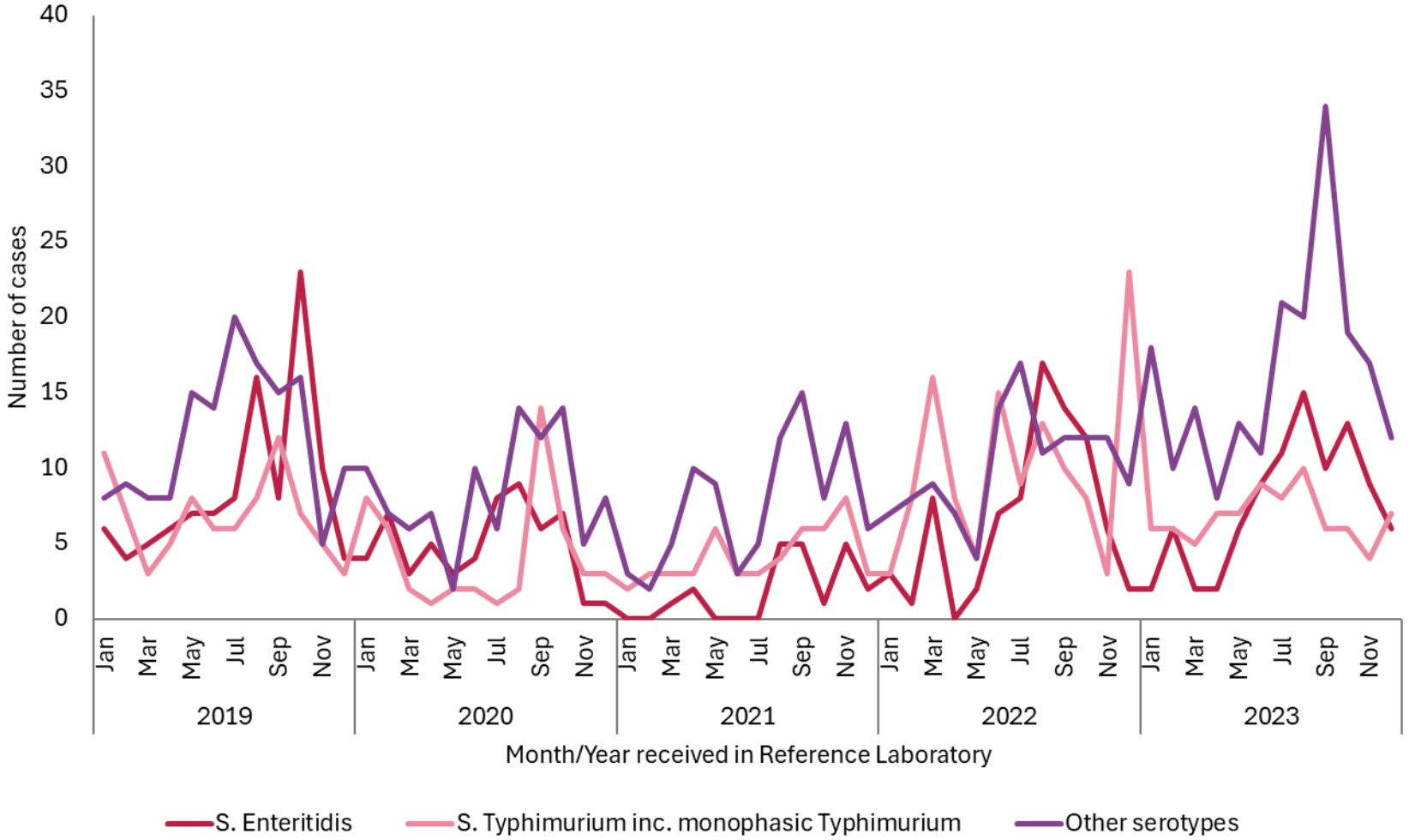
Symptom	Symptom present (n)	Symptom not present (n)	Unknown (n)	% with symptoms (where known)
Diarrhoea	350	21	35	94%
Abdominal pain	266	57	83	82%
Nausea	214	103	89	68%
Fever	219	122	65	64%
Vomiting	168	182	56	48%
Headache	136	157	113	46%
Myalgia	106	173	127	38%
Bloody diarrhoea	93	242	71	28%
Rash	18	278	110	6%

Diarrhoea (94%) followed by abdominal pain (82%) and nausea (68%) were the most common symptoms reported among cases notified in 2023.

42% (n=172) of cases in 2023 were reported as having been admitted to hospital, comparable to 43% in 2022.

Data source: Computerised Infectious Diseases Reporting System (CIDR) 21/10/2024

Salmonellosis in Ireland: serotypes, 2019-2023



Excludes cases where isolates were not referred to the Reference Laboratory for further typing.

Data source: National Salmonella, Shigella and Listeria Reference Laboratory

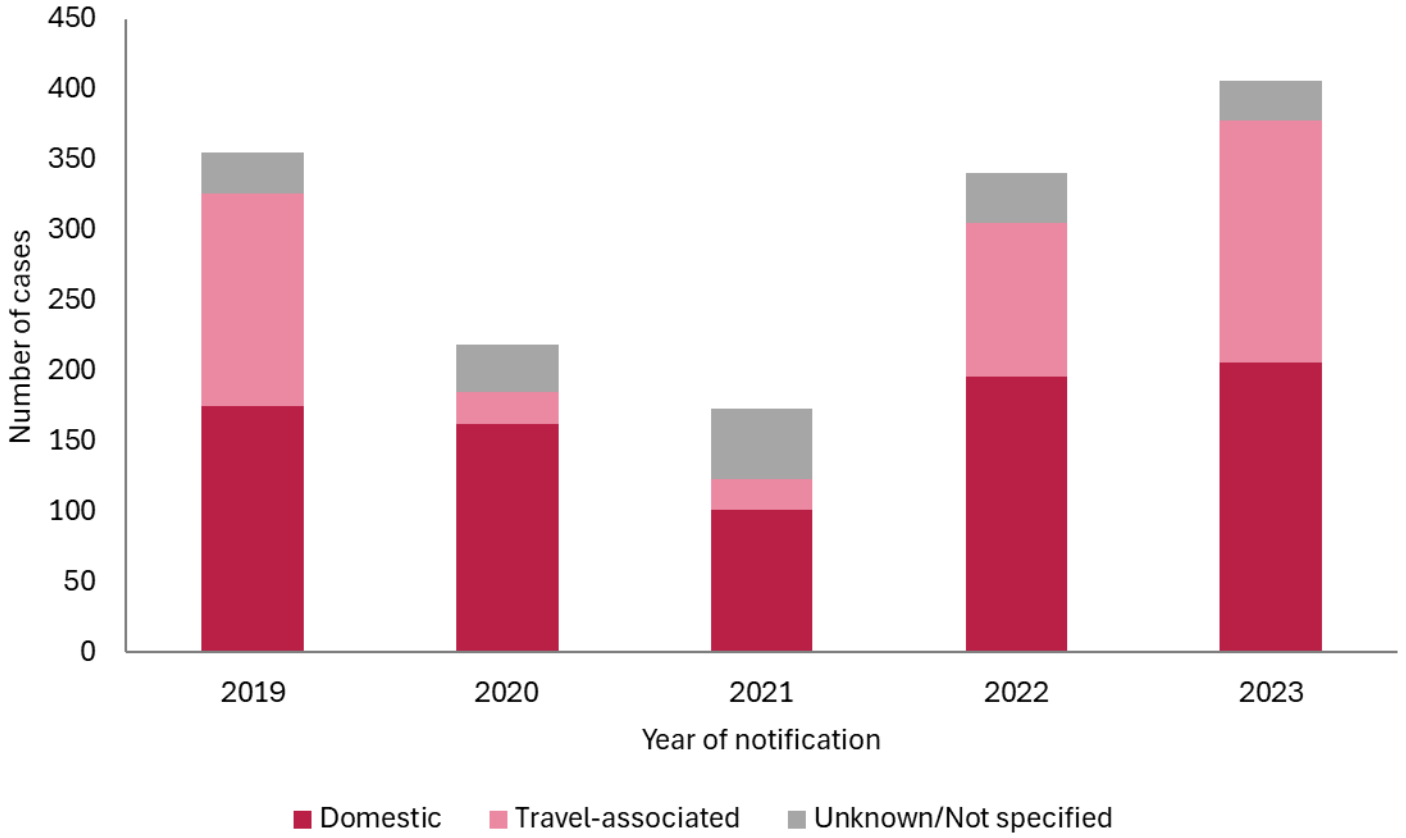
The NSSLRL analysed 358 human non-typhoidal *Salmonella* isolates referred for further typing in 2023.

S. Enteritidis (25%) and *S*. Typhimurium (including monophasic *S*. Typhimurium) (22%) remained the most common serotypes in 2023. The overall proportion of cases of either *S*. Enteritidis or *S*. Typhimurium was lower than is typically seen, while the proportion of other serotypes was higher, particularly during July to October. This peak in other serotypes was attributable to many different serotypes, rather than an increase in any one type.

Other frequently seen serotypes in 2023 included *S*. Infantis, *S*. Stanley and *S*. Newport.

Salmonellosis in Ireland: international travel 2018-2023

In Ireland, international travel is typically considered a risk factor for acquiring salmonellosis and the proportion of travel-associated cases returned to pre-pandemic levels in 2023



Information on international travel was available for 93% of cases notified in 2023

Data source: Computerised Infectious Diseases Reporting system (CIDR) 21/10/2024

Where data were available, 46% (n=172) of cases in 2023 were associated with international travel, increased from 36% and 18% of cases in 2022 and 2021, respectively, but comparable with 46% of cases associated with travel in 2019.

Popular holiday destinations like Spain, Thailand, Turkey, India and Mexico were the most commonly reported countries of infection among travel-associated cases in 2023.

S. Typhimurium (inc. monophasic *S*. Typhimurium), accounted for 13% (n=22) of travel-associated cases compared to 26% (n=54) of domestic cases in 2023.
S. Enteritidis accounted for 33% (n=56) of travel-associated cases, compared to 16% (n=32) of domestic cases in 2023.

Salmonellosis in Ireland: outbreaks and clusters, 2023

15 outbreaks of salmonellosis were notified in 2023 (5 general and 10 family outbreaks), comparable to 17 outbreaks notified in 2022, and to the annual number of outbreaks notified prior to the COVID-19 pandemic

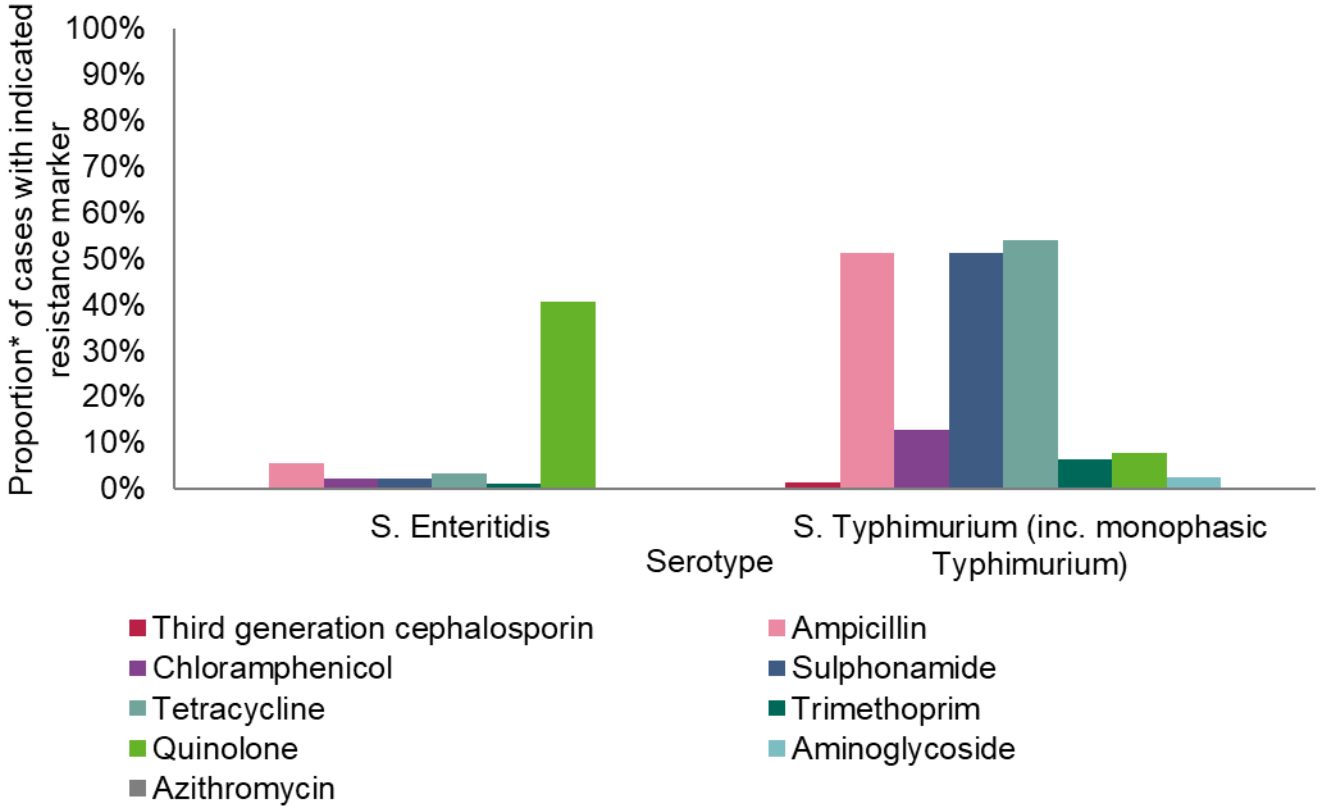
- One general outbreak was part of a larger international foodborne outbreak and involved 7 laboratory-confirmed cases of *Salmonella* Mbandaka ST413 from Ireland and linked to consumption of chicken meat products in the EU/EEA and the UK
- Four general outbreaks were investigated as regional outbreaks
  - One Monophasic *S.* Typhimurium ST34 from Dublin and Northeast was a community outbreak involving 3 people ill with unknown transmission mode
  - One *S.* Typhimurium ST19 outbreak in Dublin and Southeast involving 3 people ill and associated with international travel to Kenya
  - One Monophasic *S*. Typhimurium ST34 outbreak in the West and Northwest was a foodborne community outbreak involving 8 people ill, associated with a single event but a source was not identified for this outbreak
  - One *S*. Stanley ST29 outbreak in the West and Northwest was a suspected foodborne community outbreak involving 2 people ill

- Whole genome sequencing analysis performed at the NSSLRL confirmed that most (67%) *Salmonella* isolates typed in 2023 were not genetically linked (at that time) but 33 new *Salmonella* genetic clusters were identified by NSSLRL in 2023 and an additional 41 cases notified in 2023 were also added to 16 previously identified genetic clusters
  - The newly identified clusters were generally small, with a median of 2 cases per cluster (range: 2-7)
  - The majority of these clusters did not meet the threshold for further public health or HPSC investigation

[1]European Centre for Disease Prevention and Control, European Food Safety Authority, 2024. Multi-country outbreak of Salmonella Mbandaka ST413 linked to consumption of chicken meat products in the EU/EEA and the UK – first update - 21 March 2024.

Salmonellosis in Ireland: antimicrobial resistance, 2023

Antimicrobial resistance is predicted based on Whole Genome Sequencing (WGS) analysis conducted in the National *Salmonella*, *Shigella* and *Listeria* Reference Laboratory.
Of the isolates sequenced the Reference Laboratory in 2023, 34% (n=122) were predicted to be susceptible to all classes of antimicrobial included in the analysis, while the remaining 66% (n=236) displayed resistance determinants to at least one antimicrobial class.



*Some isolates may have resistance markers to more than one antimicrobial class

Data source: National Salmonella, Shigella and Listeria Reference Laboratory

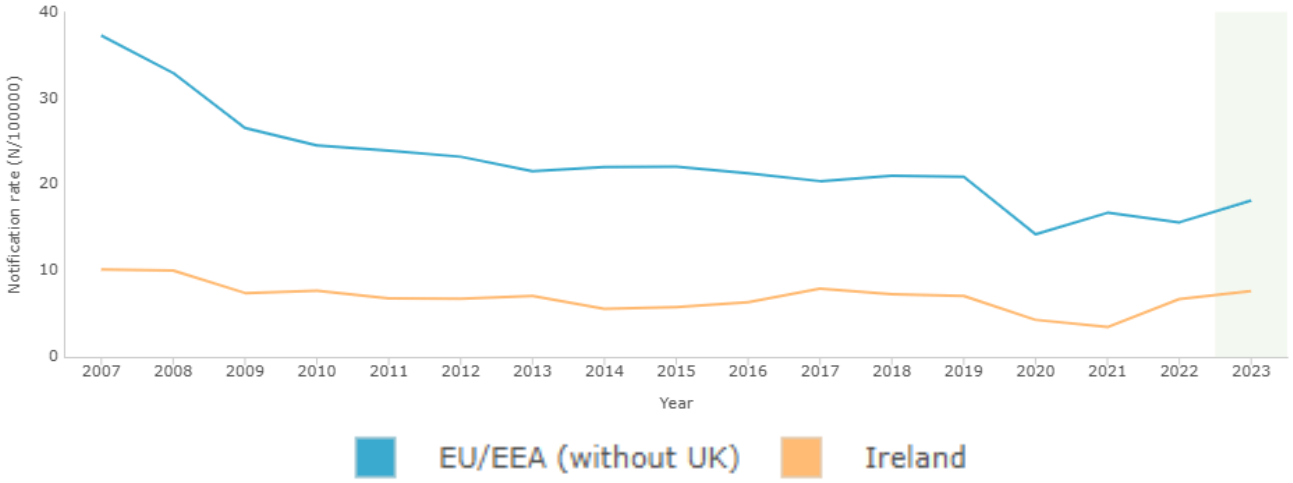
Overall, the proportion of predicted resistant isolates was lower than 10% for most antimicrobial classes, apart from ampicillin, sulphonamides, tetracycline and quinolones.

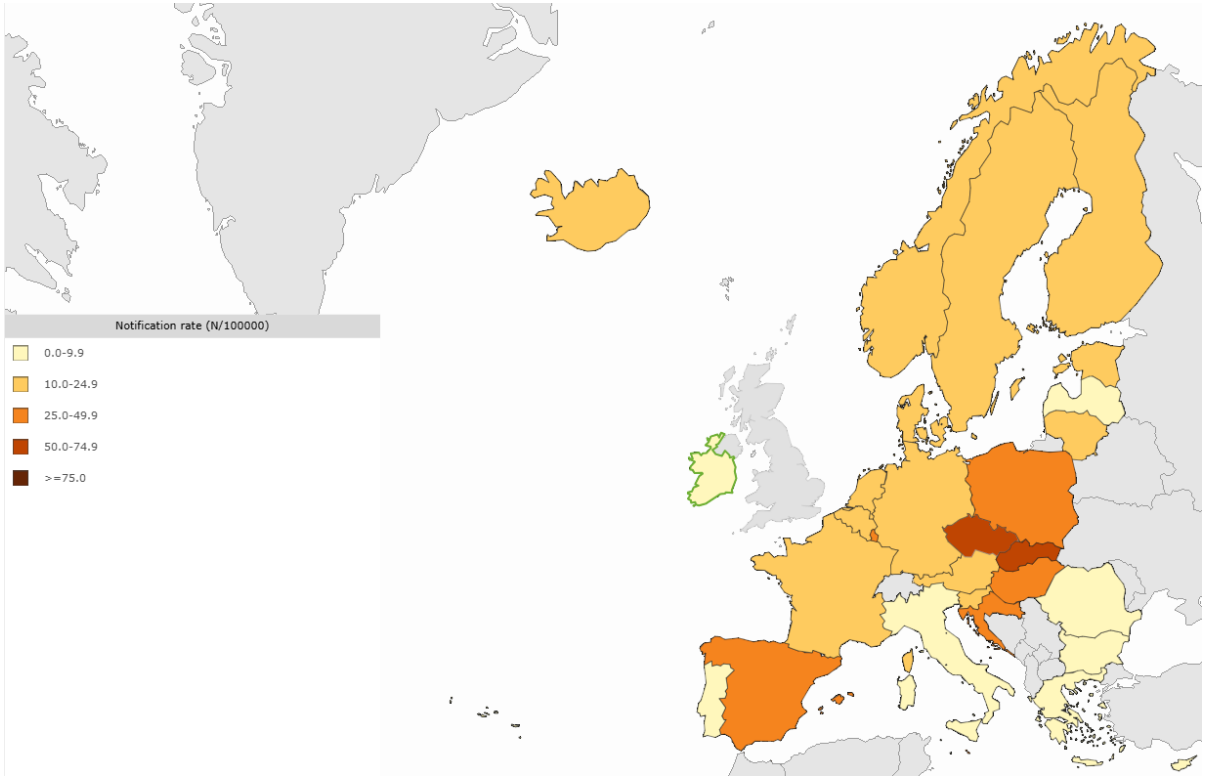
The proportions of *S*. Typhimurium isolates with resistance determinants for any class were higher than the proportions of *S*. Enteritidis, apart from predicted quinolone resistance. These serotype-specific trends in antimicrobial resistance have also been demonstrated internationally and quinolone resistance has significantly increased in *S*. Enteritidis in the EU in the ten year period 2013-2022[1]. Fluroquinolone resistant *Salmonella* has been included on the WHO bacterial pathogens priority list, 2024[2].

1. The European Union summary report on antimicrobial resistance in zoonotic and indicator bacteria from humans, animals and food in 2021–2022
2. WHO Bacterial Priority Pathogens List, 2024

Salmonellosis in the EU/EAA, 2007-2023

In 2023, the salmonellosis notification rate in Ireland remained lower than the EU average notification rate (18.15/100,000) and was among the lowest rates in Europe.





Data source: ECDC Surveillance Atlas of Infectious Diseases 25/11/2023

Salmonellosis in Ireland, 2023 summary

- 406 cases of salmonellosis notified in 2023; the notification rate increased from 6.6/100,000 in 2022 to 7.9/100,000 population in 2023
- 15% of cases were children aged under 5 years, decreased from 2022 with a slight increase among adult age groups
- HSE Dublin and Midlands region had the highest CIR (9.5/100,000)
- *S*. Enteritidis and *S*. Typhimurium continued to be the most commonly reported serotypes, with *S*. Enteritidis more likely among travel-associated cases and *S*. Typhimurium more likely among domestic cases; however the proportion of both serotypes decreased compared to 2022 due to an increased proportion in other serotypes, such as *S*. Infantis, *S*. Stanley and *S*. Newport
- The proportion of travel-associated cases had returned to pre-pandemic levels in 2023 and continued to be a key risk factor for infection, with 46% of cases reporting recent international travel (where known)
- Five general outbreaks of salmonellosis were notified in 2023, including one national outbreak linked to a larger multi-country outbreak of *S*. Mbandaka, linked to consumption of chicken meat products
- Antimicrobial resistance was generally higher for *S*. Typhimurium than *S*. Enteritidis among all antimicrobial classes tested, with the exception of quinolone resistance, in line with international trends. Non-typhoidal *Salmonella* was included on the updated World Health Organisation list of high priority antimicrobial resistant bacteria most threatening to human health in 2024: WHO Bacterial Priority Pathogens List, 2024: bacterial pathogens of public health importance to guide research, development and strategies to prevent and control antimicrobial resistance
- When compared to other EU/EEA countries, Irelands notification rate remained below the EU/EEA average

Data source: Computerised Infectious Diseases Reporting System (CIDR) 21/10/2024

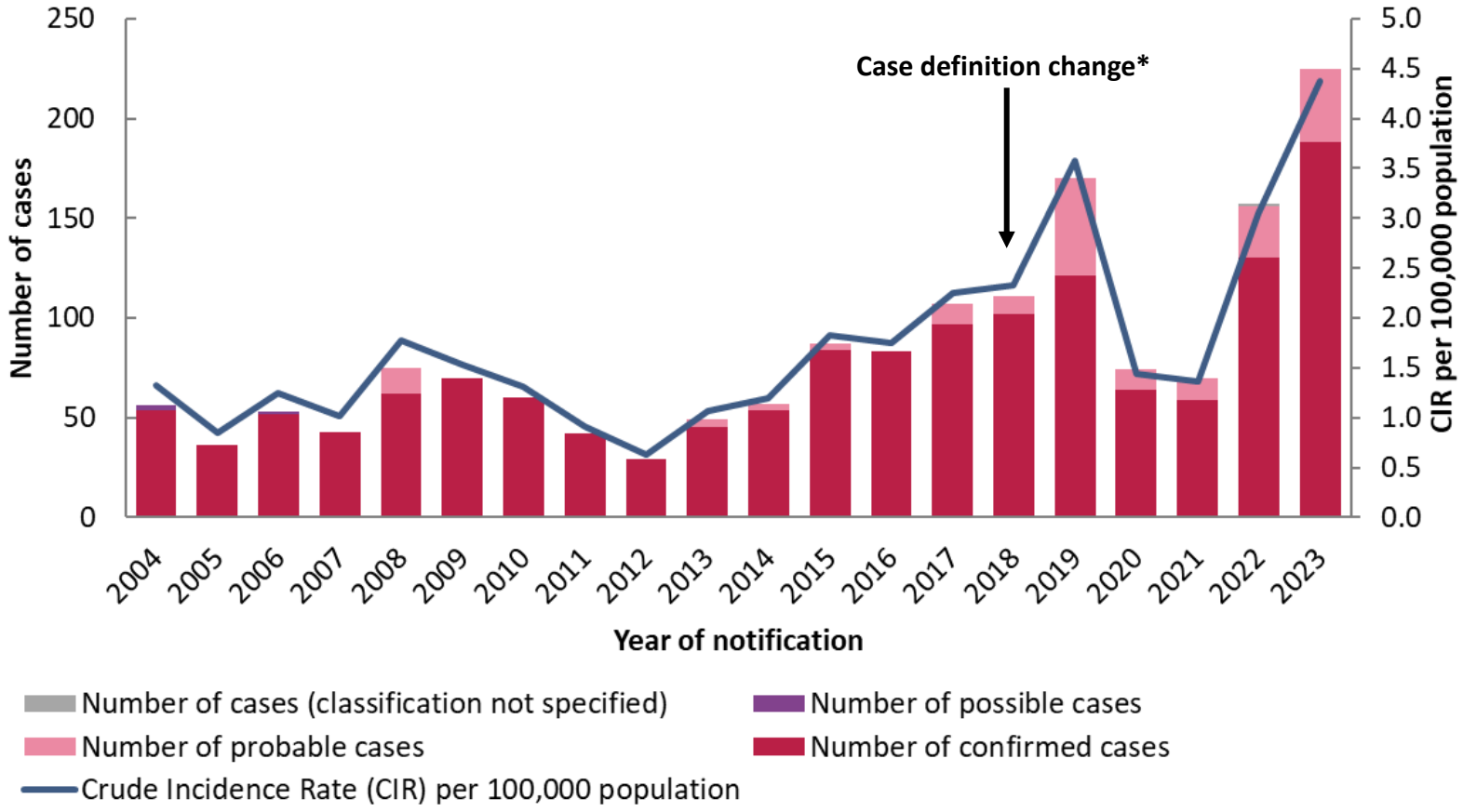
Shigellosis in Ireland

Shigellosis in Ireland

- Shigellosis is an infection of the gastrointestinal tract caused by one of four species of the bacterial genus *Shigella*. The bacteria are only found in humans.
- Anyone can get shigellosis, but those who are at greater risk include children attending childcare facilities and their parents, overseas travellers and gay, bisexual and other men who have sex with men (gbMSM).
- Infection typically presents as diarrhoea (sometimes bloody), nausea and vomiting, fever and abdominal cramps. Shigellosis symptoms can range from being mild and self-limiting to more serious complications, including colitis, sepsis and haemolytic uraemic syndrome, in a minority of cases. Shigellosis may also be asymptomatic but remains transmissible by asymptomatic carriers.
- *Shigella* bacteria are transmitted via the faecal-oral route, either through consumption of contaminated food or water, oral contact with contaminated objects or through direct person-to-person spread. Shigellosis is highly transmissible with a very low infectious dose.

For more information on risk factors and precautions please see the Shigellosis Fact Sheet on the HPSC website.

Shigellosis in Ireland: trends, 2004-2023



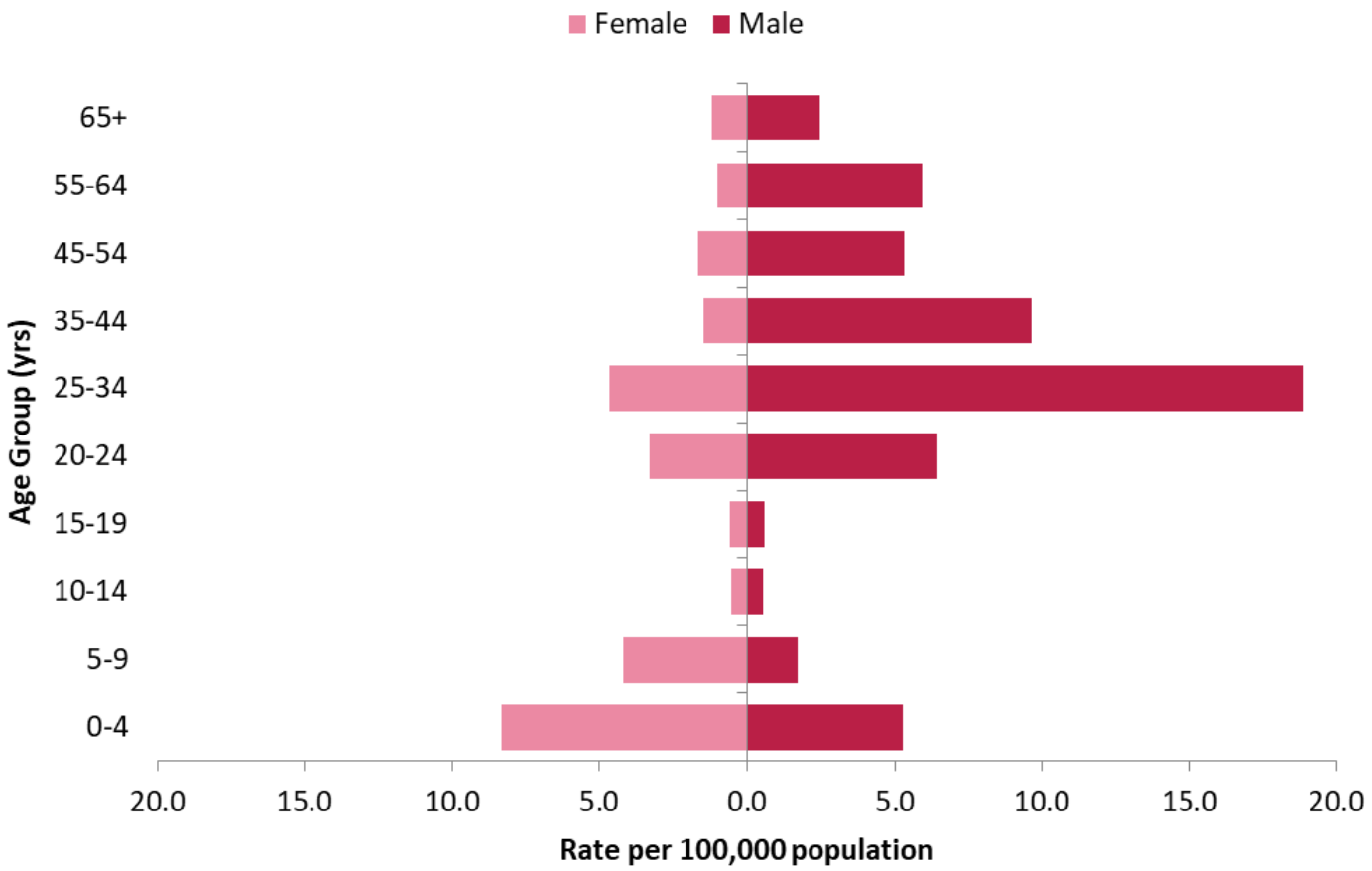
*During 2018 the shigellosis case definition changed to facilitate the reporting of PCR positive, culture negative cases as Probable cases

Data source: Computerised Infectious Diseases Reporting System (CIDR) 05/12/2024

In 2023, 225 cases of shigellosis were notified (188 confirmed and 37 probable), giving a CIR of 4.4/100,000 population. This was a 43% increase compared to 2022.

With the exception of the COVID-19 pandemic years, the CIR for shigellosis has been showing a generally increasing trend since 2013 and the previous highest notification rate was in 2019 (3.6/100,000).

Shigellosis in Ireland: age and sex distribution, 2023



Excludes cases where age or sex are not known (n=1)

Data source: Computerised Infectious Diseases Reporting System (CIDR) 21/10/2024

In 2023, 73% (n=163) of cases were male and 27% (n=62) were female, comparable to 2022.

The highest age-specific incidence rate (ASIR) was among 25-34 year olds (11.6/100,000), with males accounting for 79% of cases among this age group. The ASIR for males aged 25-34 years was 18.8/100,000.

The next highest ASIR was among 0-4 year olds (6.8/100,000), comparable to 2022.

Shigellosis in Ireland: geographical distribution, 2021-2023

Data source: Computerised Infectious Diseases Reporting System (CIDR) 21/10/2024

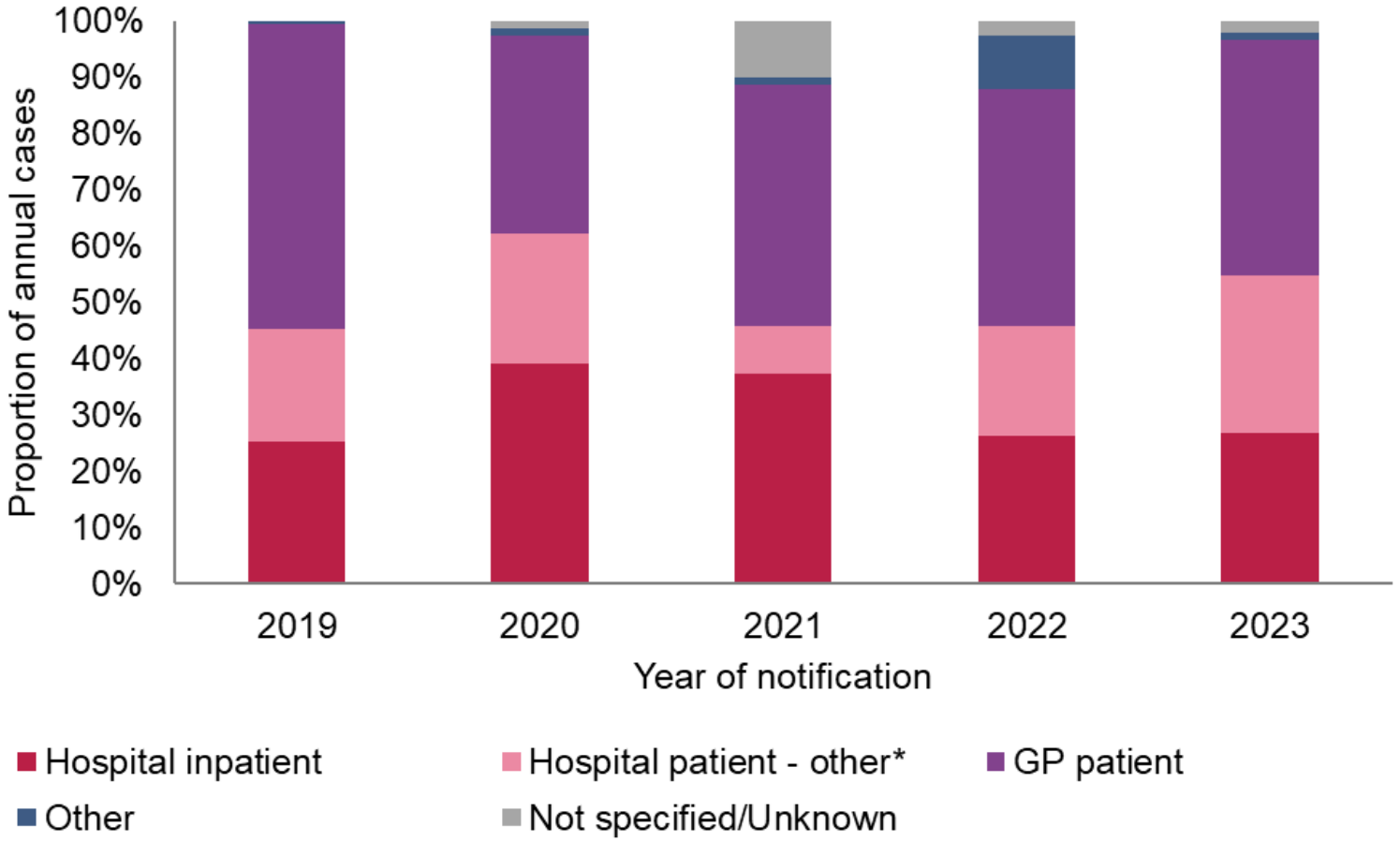
In 2023, the shigellosis CIR increased in all HSE regions.

As in 2022, the area reporting the highest incidence rate in 2023 was the HSE Midwest region (6.1/100,000), while HSE Southwest reported the lowest incidence in 2023 (2.8/100,000).

The largest increase in 2023 compared to 2022 was seen in HSE West and Northwest, which increased by 338% from 1.1/100,000 in 2022 to 4.6/100,000 in 2023.

*Trend data by HSE Health Region should be interpreted with caution due the re-organisation of HSE Healthboards to HSE Health Regions in 2022.

Shigellosis in Ireland: disease severity, 2019-2023



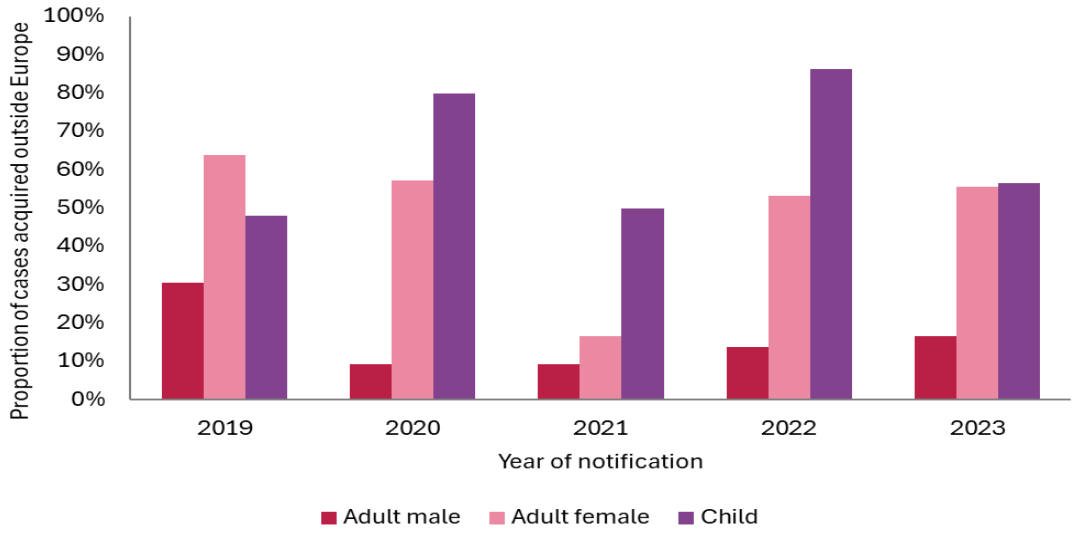
*"Hospital patient – other" refers to cases where patient type was recorded on CIDR as "A & E patient", "Hospital outpatient" or "Hospital day patient"

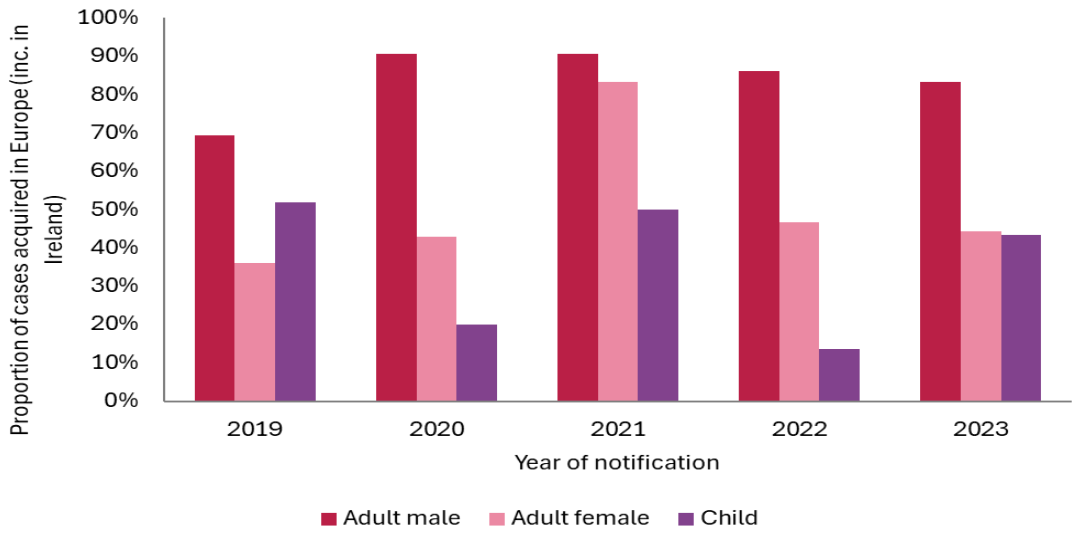
Data source: Computerised Infectious Diseases Reporting System (CIDR) 21/10/2024

27% (n=60) of shigellosis patients were reported as hospital inpatients in 2023, comparable with 2019 and 2022.

The proportion of hospitalised shigellosis cases was higher during the COVID-19 pandemic (39% and 37% in 2020 and 2021, respectively), likely reflecting the under-ascertainment of milder cases during this time.

Shigellosis in Ireland: international travel, 2019-2023





Data source: Computerised Infectious Diseases Reporting System (CIDR) 21/10/2024

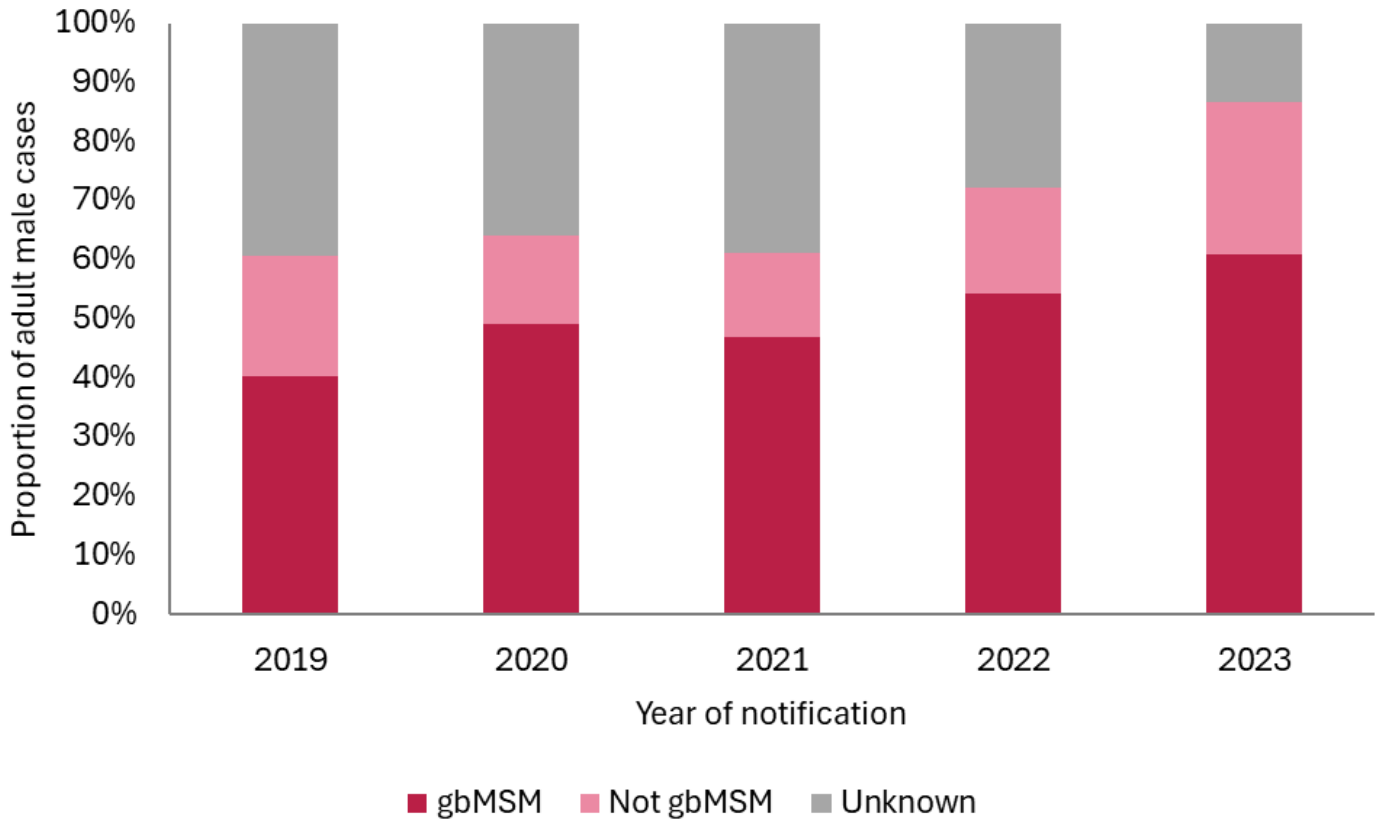
Where information on international travel was available (88% completeness), 49% (n=97) of cases reported country of infection outside of Ireland in 2023, comparable to 50% of cases in 2022.

Of the cases who travelled in 2023, 58% (n=56) travelled to destinations outside of Europe, most commonly to India and Pakistan.
Among cases who travelled within Europe in 2023, the most commonly reported country of infection was Spain (51%; n=21).

Historically, shigellosis cases in Ireland were associated with travel to destinations outside of Europe and this has remained the case among children and adult females (57% and 56%, respectively in 2023). Conversely, domestically-acquired infections or infections acquired in other European countries were more common among adult males (83% in 2023).

Shigellosis in Ireland: sexual orientation 2019-2023

Sexual transmission among gay, bisexual and other men who have sex with men (gbMSM) is a key feature of shigellosis in Ireland and elsewhere



[1] Multi-sectoral Incident Management Team convened to investigate antimicrobial resistant shigella infection in Ireland, 2023. Epi Insight Vol 24 Issue 9 | December 2023.

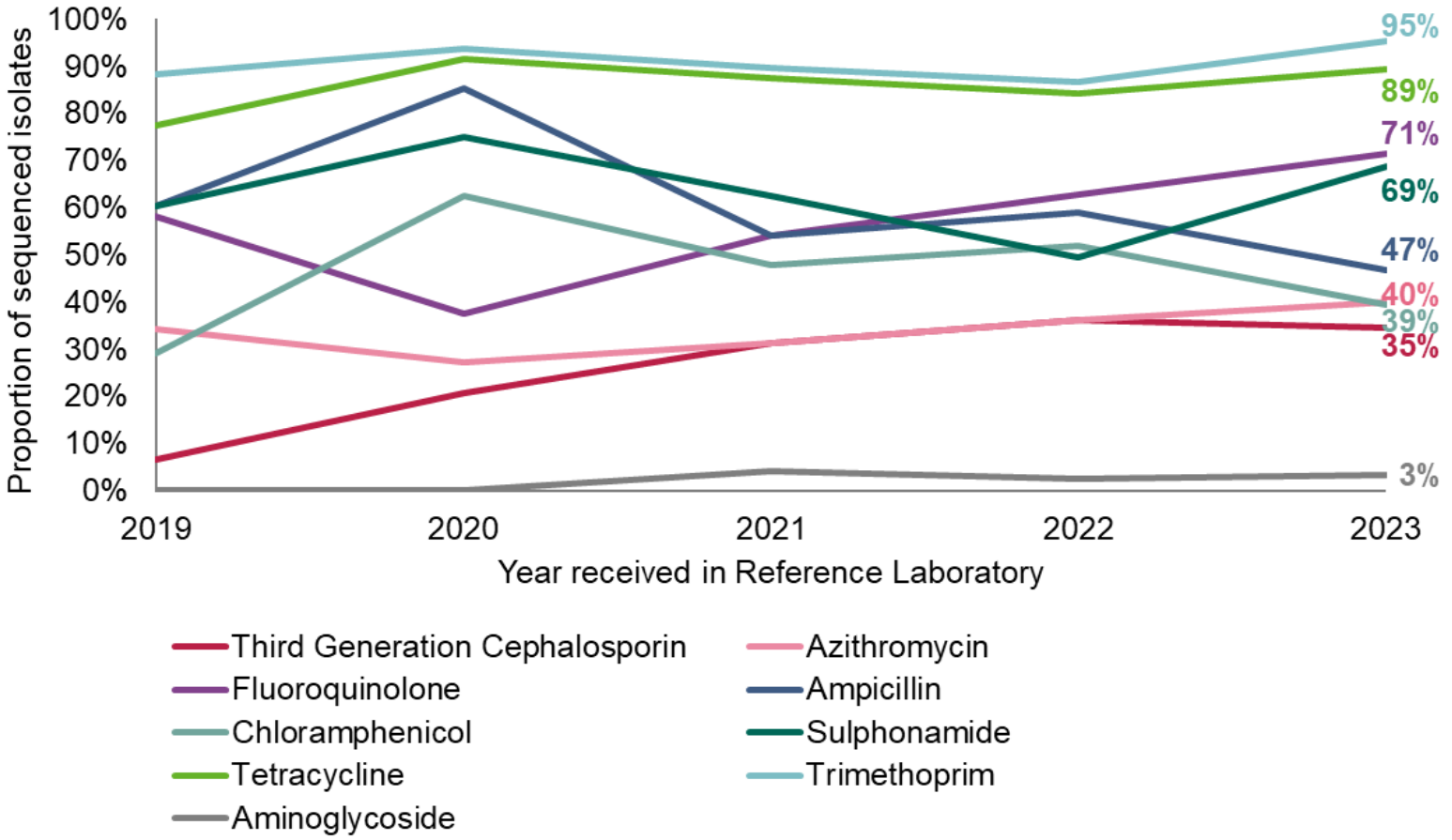
Data source: Computerised Infectious Diseases Reporting System (CIDR) 21/10/2024

67% (n=151) of shigellosis cases notified in 2023 were adult males, increased from 60% in 2022 but comparable to 72% and 70% in 2020 and 2021, respectively.

Sexual orientation was reported as gbMSM for 61% (n=92) of adult male cases notified in 2023, increased from 54% (n=51) in 2022. The proportion of adult males cases reported with unknown sexual orientation decreased to 13% in 2023 from 28% in 2022, as a result of the actions of the multi-sectoral Incident Management Team (IMT) convened to investigate antimicrobial resistant shigella infection in Ireland during 2023[1].

Further information on sexual transmission of shigellosis infections among gbMSM in Ireland and the work of the IMT is available here: https://www.hpsc.ie/a-z/gastroenteric/shigellosis/epidemiologicaldata/

Shigellosis in Ireland: *Shigella* species and antimicrobial resistance, 2023



Data source: National Salmonella, Shigella and Listeria Reference Laboratory

The NSSLRL analysed 148 human non-duplicate *Shigella* isolates referred for further typing in 2023, representing 79% of cases notified as confirmed cases in 2023:

- 53% (n=78) were *Shigella sonnei*
- 44% (n=65) were *Shigella flexneri*
- *Shigella dysenteriae* identified in two cases, *Shigella boydii* identified in one case and serotype was not available for the remaining two cases

Antimicrobial resistance is predicted based on whole genome sequencing (WGS) analysis carried out in the NSSLRL. See graph for trends in the presence of resistance determinants for indicated antimicrobial classes in isolates characterised by WGS by year.

Further information on antimicrobial resistant shigellosis infections in Ireland is available here: https://www.hpsc.ie/a-z/gastroenteric/shigellosis/epidemiologicaldata/

Shigellosis in Ireland: outbreaks and clusters, 2023

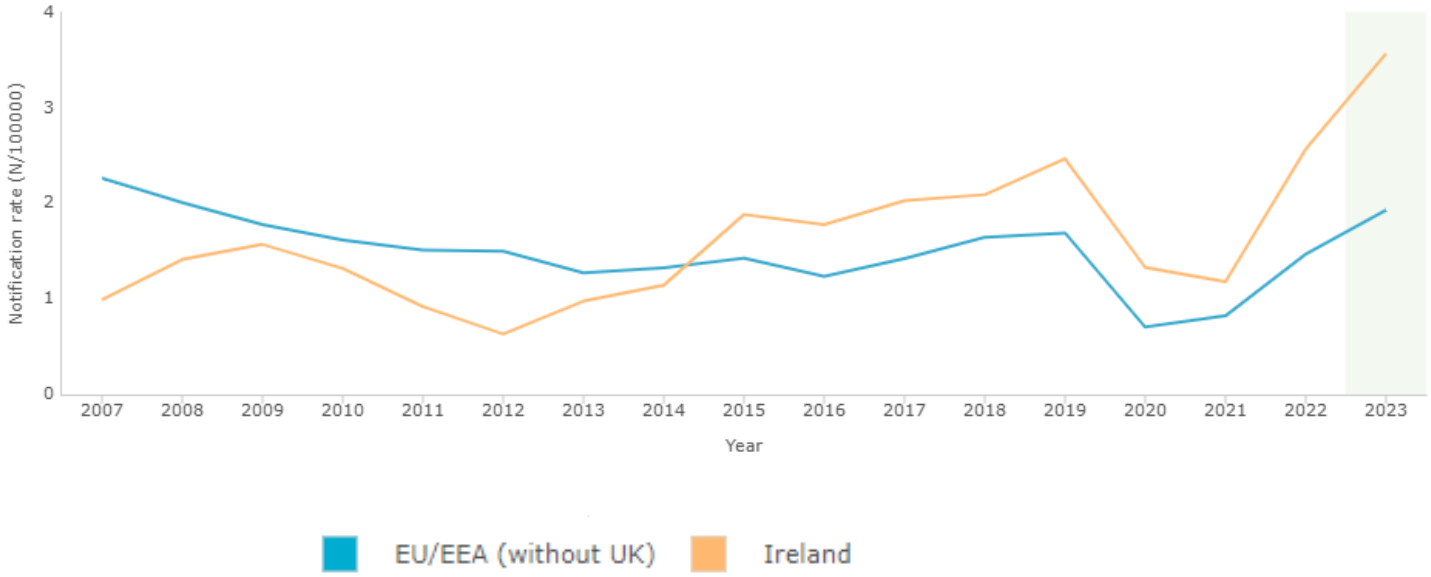
Seven outbreaks of shigellosis were notified in 2023 (1 general and 6 family outbreaks), increased from three outbreaks notified in 2022

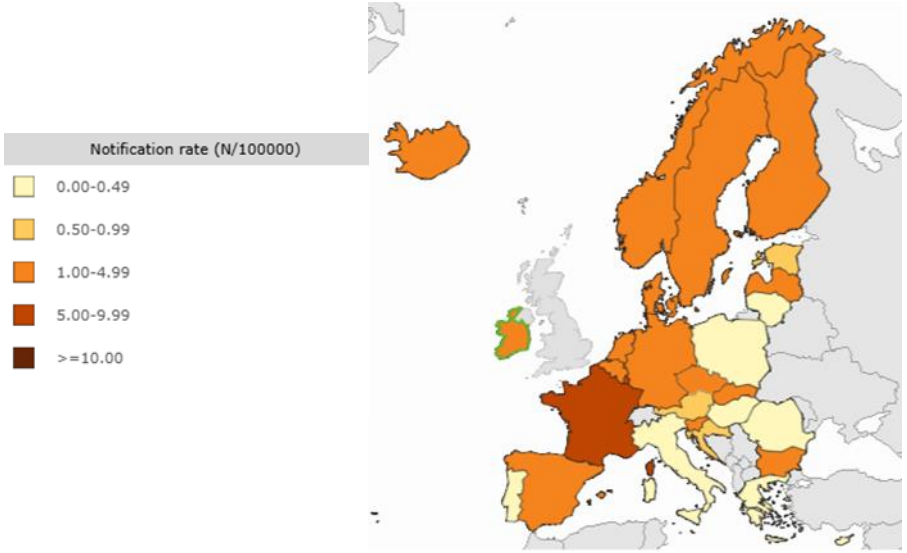
- All outbreaks notified in 2023 were small, ranging in size from two to three cases
  - The general outbreak was associated with international travel to Spain
  - Of the family outbreaks, suspected mode of transmission was person-to-person for four including one where sexual transmission was suspected, foodborne and person-to-person for one and associated with international travel to Morocco for one
- Whole genome sequencing analysis performed at the NSSLRL confirmed that only 32% (n=47) of shigella isolates typed in 2023 were not genetically linked at the time of reporting
- 68% (n=101) of *Shigella* isolates clustered within seven new and nine previously identified distinct microbiological clusters
  - With the exception of one newly identified cluster, the new clusters were generally small
  - The previously identified clusters and one of the newly identified clusters tended to be larger, some with the earliest identified cases dating to 2017 and 2018, and with cases largely among gbMSM
  - In 2023, a multi-sectoral Incident Management Team was established to investigate antimicrobial resistant *Shigella* clusters among gbMSM in Ireland[1]

[1] EPI INSIGHT. Vol 24 Issue 9, December 2023.

Shigellosis in the EU/EAA, 2007-2023

The shigellosis notification rate in Ireland has been higher than the EU average notification rate since 2015 and remained higher than the EU average of 1.93/100,000 in 2023.





Shigellosis in Ireland, 2023 summary

- 225 cases of shigellosis notified in 2023
- Notification rate increased from 3.0/100,000 in 2022 to 4.4/100,000 population in 2023
- Almost three-quarters of cases were male
- The HSE Midwest region reported the highest CIR in 2023
- *S. sonnei* was the most commonly reported species in 2023
- Infection associated with international travel outside Europe was more common among children and adult females, while domestically-acquired infection was more common among adult males, suggesting that international travel remains strong risk for shigellosis among children and adult females, while sexual transmission is important risk factor for shigellosis in adult males
- Seven small outbreaks of shigellosis were notified in 2023, however a number of distinct microbiological clusters were identified; investigation of these clusters, as well public health and clinical interventions were ongoing during 2023
- Antimicrobial resistance to clinically relevant antimicrobials continued to be a feature of shigellosis infection in Ireland in 2023. *Shigella* was included on the updated World Health Organisation list of high priority antimicrobial resistant bacteria most threatening to human health in 2024: WHO Bacterial Priority Pathogens List, 2024: bacterial pathogens of public health importance to guide research, development and strategies to prevent and control antimicrobial resistance
- When compared to other EU/EEA countries, Irelands notification rate was above the EU/EEA average

Typhoid and Paratyphoid in Ireland

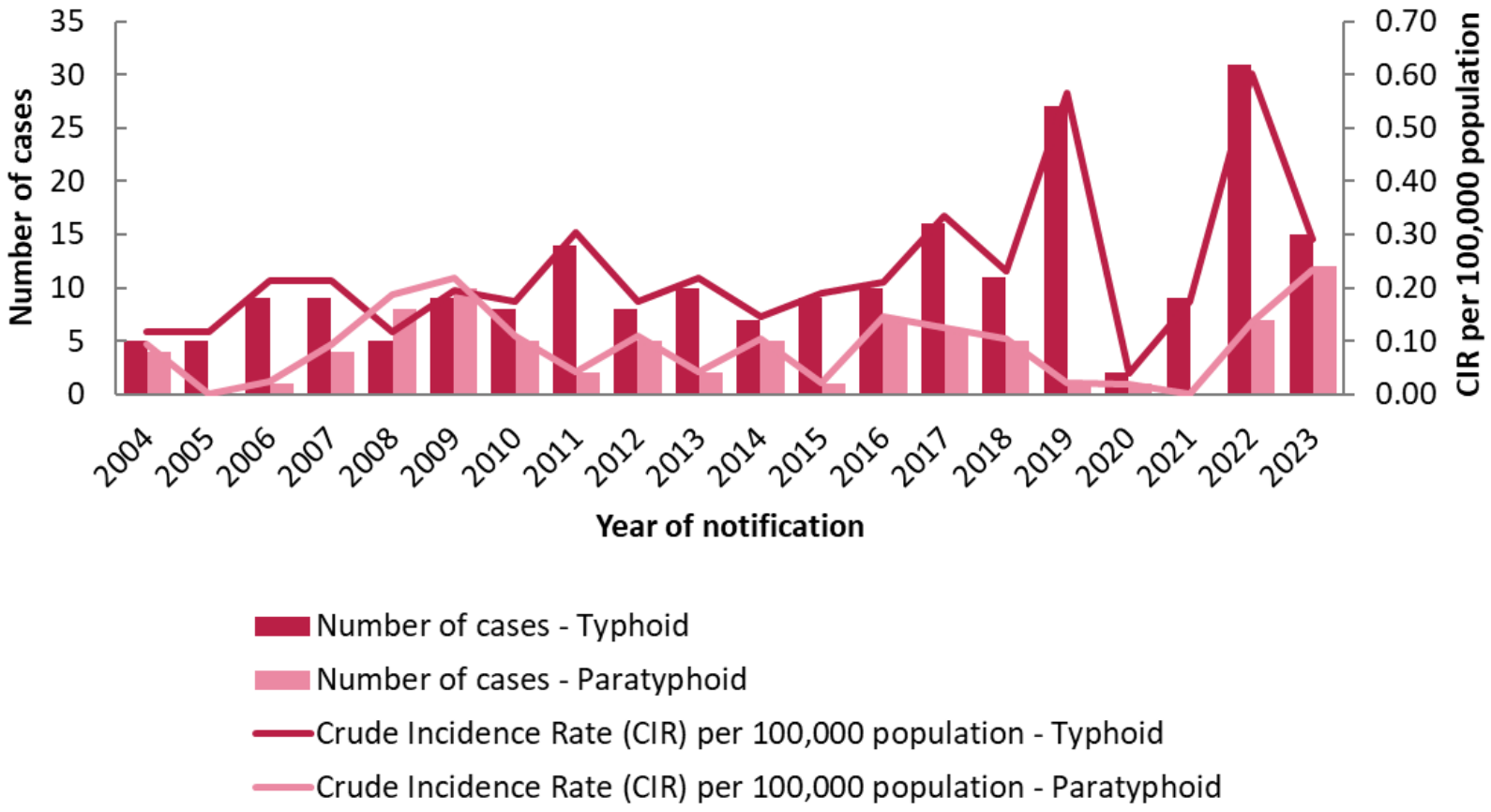
Typhoid and Paratyphoid in Ireland

- Typhoid fever is a potentially life-threatening systemic disease caused by the bacterium *Salmonella* Typhi
- Humans are the only reservoir for *S*. Typhi and infection usually spreads through contaminated food and water. People who recover may become chronic carriers and may shed the bacteria in their faeces for long periods of time.
- Initial symptoms will usually include prolonged fever, headache, malaise, nausea, abdominal pain, diarrhoea or constipation, a cough and a rash. Severe cases may progress to development of complications or death.
- Paratyphoid is an illness caused by a similar bacterium, *Salmonella* Paratyphi. However, illness is generally milder, of shorter duration and with fewer complications.
- Typhoid and paratyphoid are not endemic in Ireland but are endemic in parts of the world where sanitation is poor and that lack clean drinking water. A small number of typhoid and paratyphoid cases are reported in Ireland annually. These are almost always associated with travel to countries where the disease is endemic.
- Since November 2016, Pakistan has been experiencing a continuous surge of extensively drug resistant *S*. Typhi, with acquired resistance determinants to multiple clinically-relevant antimicrobials. In June 2023 HPSC issued advice for vaccination and typhoid precautions for travellers to Pakistan, Afghanistan and other countries where typhoid is endemic. Advice was also issued to healthcare services to be aware of the potential for limited treatment options for typhoid patients returning from these areas[1].

For more information on risk factors and precautions please see the Typhoid and Paratyphoid Fact Sheet on the HPSC website.

1. Antimicrobial resistant typhoid fever in Ireland. Epi Insight Vol 24 Issue 6, June 2023.

Typhoid and Paratyphoid in Ireland: trends 2004-2023

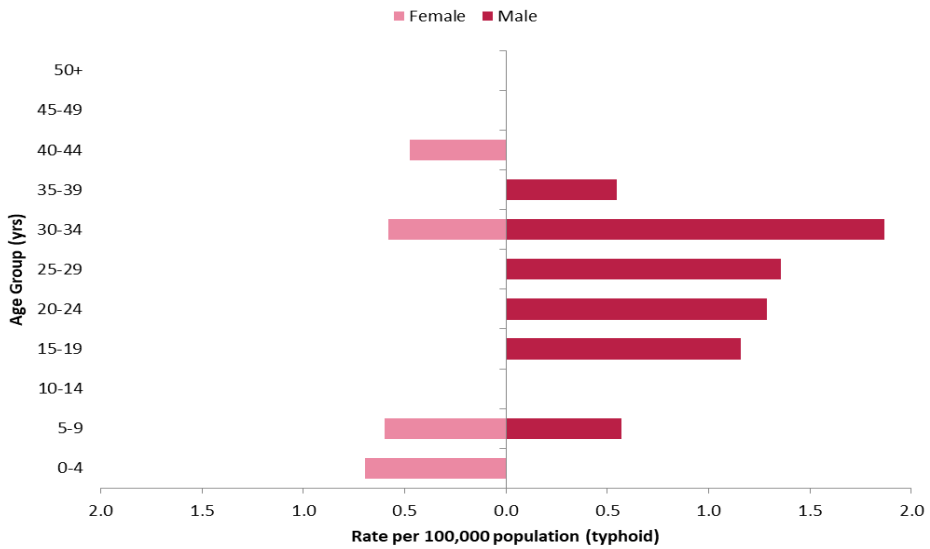


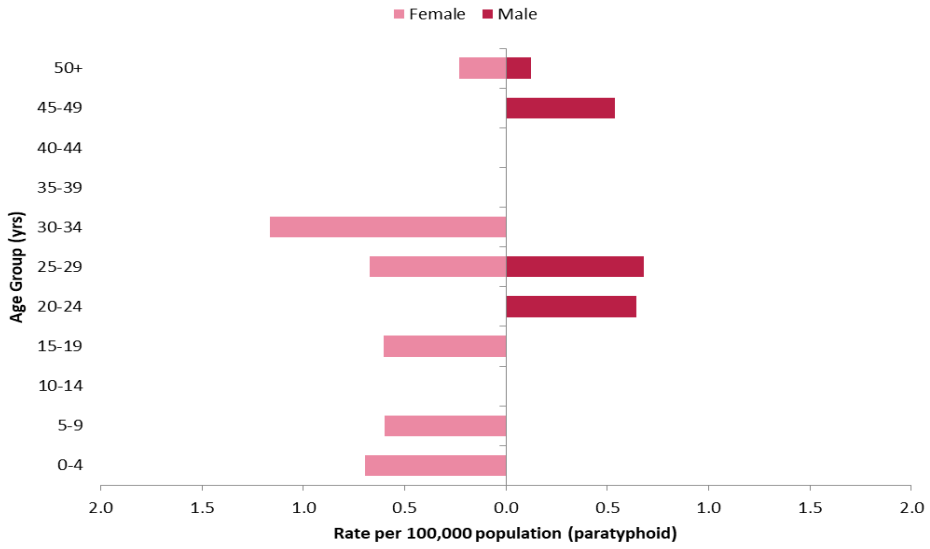
In 2023 15 cases of typhoid were notified, giving a CIR of 0.29/100,000. This was a 52% decrease on the CIR of 0.60/100,000 in 2022.

In 2023 12 cases of paratyphoid were notified, giving a CIR of 0.23/100,000. This was a 64% increase on the CIR of 0.14/100,000 in 2022 and was the highest CIR for paratyphoid since 2004.

Data source: Computerised Infectious Diseases Reporting System (CIDR) 21/10/2024

Typhoid and Paratyphoid in Ireland: age and sex distribution, 2023



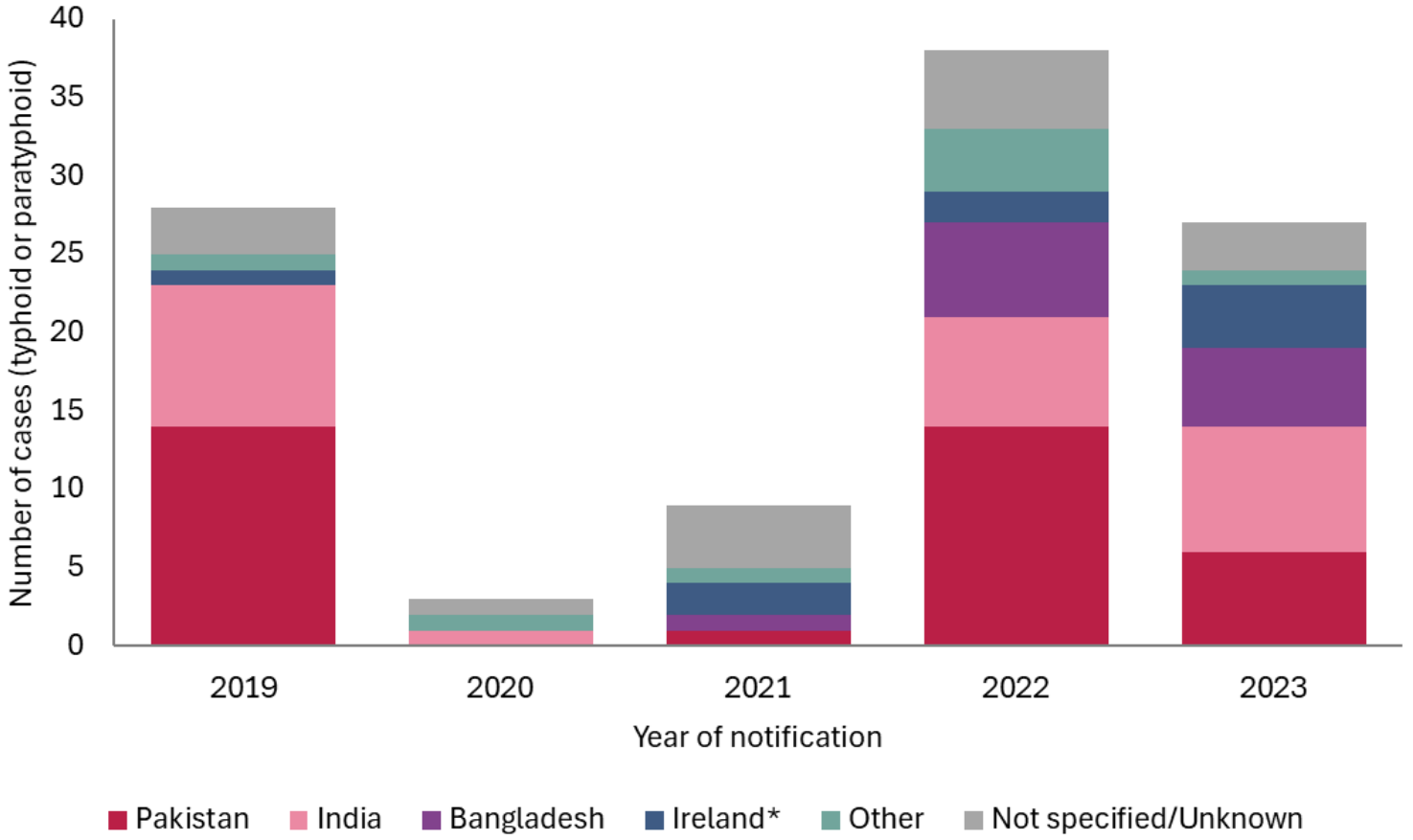


Data source: Computerised Infectious Diseases Reporting System (CIDR) 21/10/2024

In 2023, 73% (n=11) of typhoid cases were male and 27% (n=4) were female. The highest age-specific rate was among 30-34 year olds, unlike 2022 when the group most affected were children. 27% of cases in 2023 were children aged less than 17 years, decreased from 61% in 2022.

In 2023, 33% (n=4) of paratyphoid cases were male and 67% (n=8) were female. Overall, the highest age-specific rate was in those aged 25-29 years.

Typhoid and Paratyphoid in Ireland: country of infection, 2019-2023



*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 System (CIDR) 21/10/2024

Country of infection was reported for 85% of typhoid and paratyphoid cases notified from 2019 to 2023.

Pakistan has been reported as the country of infection for 39% of cases where country of infection was reported during that time period.

In 2023, country of infection was reported as India for 33% (n=8), Pakistan for 25% (n=6) and Bangladesh for 21% (n=5) of cases, where country of infection was known.

Typhoid and Paratyphoid in Ireland: outbreaks and antimicrobial resistance, 2023

- No outbreaks of typhoid or paratyphoid were notified in 2023, decreased from 3 typhoid outbreaks notified in 2022

- The NSSLRL performed WGS analysis on isolates from all 15 notified typhoid cases in 2023 and antimicrobial resistance was predicted based on the presence of resistance markers determined by WGS. Of non-duplicate sequenced isolates:
  - All had resistance markers to fluroquinolones
  - 40% had resistance markers to ampicillin
  - 40% had resistance markers to sulphonamides
  - 40% had resistance markers to trimethoprim
  - 33% had resistance markers to chloramphenicol
  - 27% had resistance markers to third generation cephalosporins; Country of infection was Pakistan for 75% of these
  - 7% had resistance markers to azithromycin
  - 7% had resistance markers to tetracycline
  - None had resistance markers to aminoglycosides
- Further information on antimicrobial resistance *Salmonella* Typhi is available here: Antimicrobial resistant typhoid fever in Ireland. Epi Insight Vol 23 Issue 3, April 2025

- With the exception of some resistance markers for fluoroquinolones, *S*. Paratyphi isolates characterised by WGS in 2023 were susceptible to all key antimicrobial classes.

Data source: Computerised Infectious Diseases Reporting system (CIDR) 29/11/2024 and National Salmonella, Shigella and Listeria Reference Laboratory

Typhoid and Paratyphoid in Ireland: 2023 summary

- 15 cases of typhoid and 12 cases of paratyphoid were notified
- Notification rate for typhoid decreased from 0.60/100,000 in 2022 to 0.29/100,000 population in 2023, comparable to the annual average rate reported prior to 2019
- Notification rate for paratyphoid increased from 0.14/100,000 in 2022 to 0.23/100,000, the highest notification rate since 2004
- The highest age-standardised incidence rates of typhoid were reported among adults, unlike previous years when children were the group most affected
- India was the most commonly reported country of infection in 2023, followed by Pakistan and Bangladesh
- Travellers to the Indian sub-continent and other countries where typhoid is endemic should be encouraged to avail of vaccination before travel and to take precautions with hand hygiene, food and drink while abroad to minimise risk of catching typhoid fever.
- Healthcare providers caring for those presenting with suspected typhoid infection and associated with recent foreign travel should be aware of high levels of resistance to key antimicrobial agents used to treat typhoid fever. Based on current data, it is particularly important in relation to those who have travelled to Pakistan or Afghanistan but other countries in the region may be similarly affected.

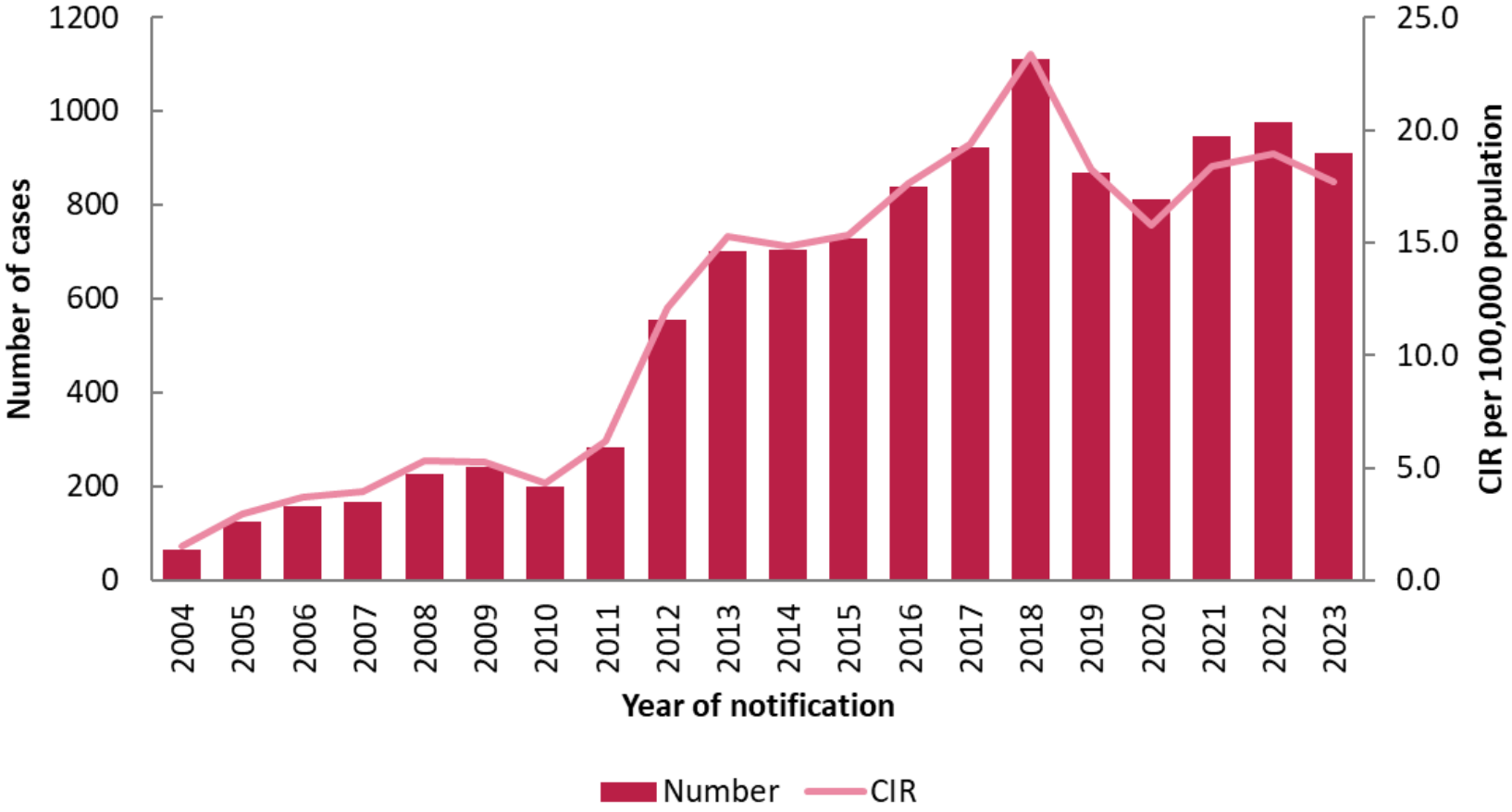
VTEC in Ireland

VTEC in Ireland

- Verotoxigenic *Escherichia coli* (VTEC) are specific strains of *E. coli* that produce toxins which can cause severe illness, particularly in children aged under five and the elderly.
- The main reservoir of VTEC is grass-feeding animals, in particular cattle. Human infection is regularly related to the consumption of undercooked beef, contaminated during processing, or other contaminated food such as unpasteurised milk and dairy products, vegetables, and poorly managed private drinking water supplies.
- VTEC may also be spread person-to-person, particularly if hygiene or handwashing habits are inadequate, for example among very young children.
- VTEC infection causes abdominal cramps and diarrhoea but can sometimes cause bloody diarrhoea. In some cases, VTEC infection can be asymptomatic.
- In some persons, particularly children under 5 years of age and the elderly, VTEC infection can also cause a complication called haemolytic uraemic syndrome (HUS), in which the red blood cells are destroyed and the kidneys can stop working properly. HUS is a life-threatening condition. With intensive care, the death rates reported internationally for those who have HUS is 3%-5%.

For more information on risk factors and precautions please see the VTEC Fact Sheet on the HPSC website.

VTEC in Ireland: trends, 2004-2023

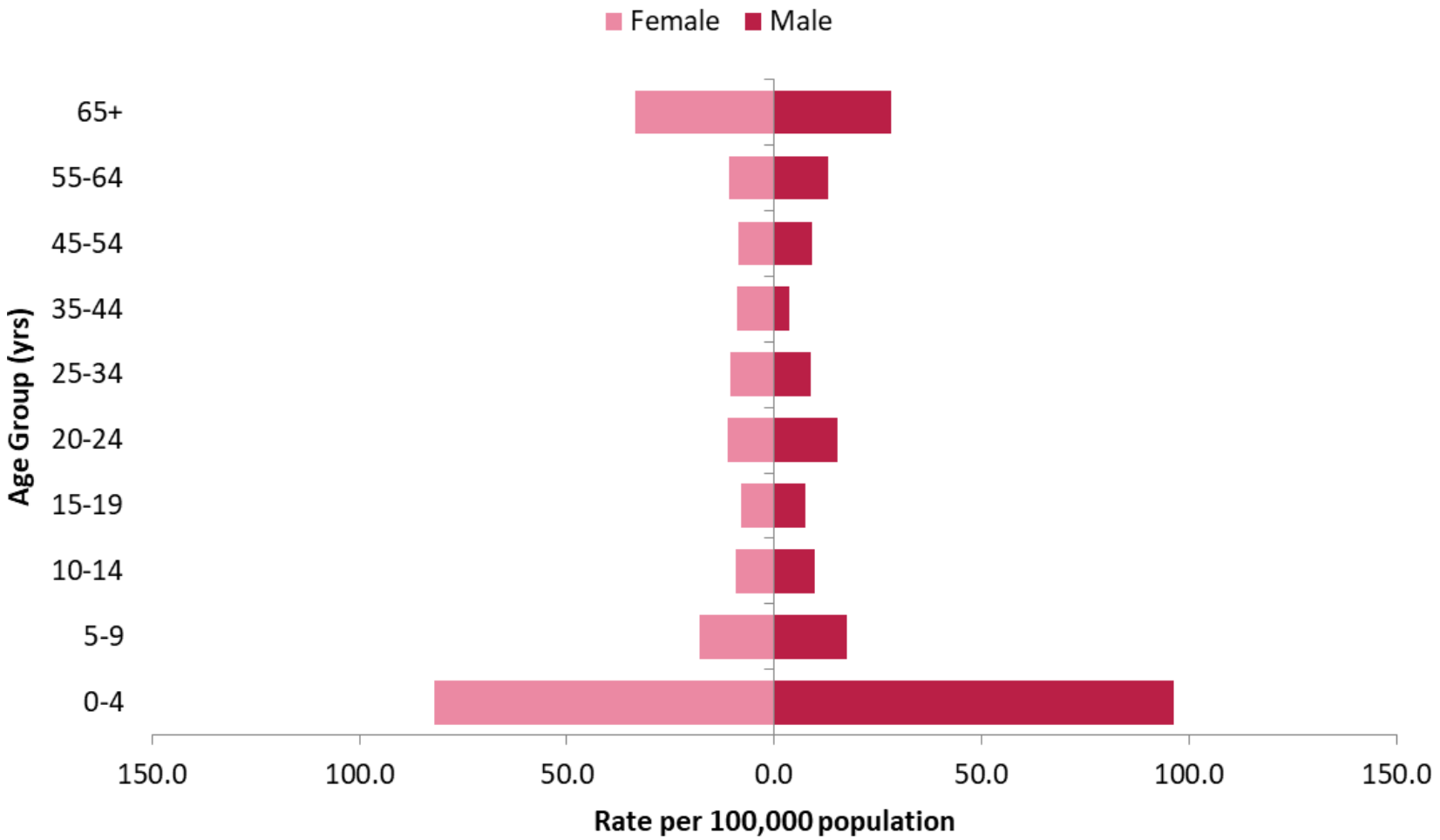


In 2023, 912 VTEC cases were notified, giving a CIR of 17.7/100,000 which is comparable to 2022 (18.9/100,000) and remains high.

Since 2010 the VTEC CIR had been showing a generally increasing trend and was at the highest recorded rate in 2018 (23.4/100,000).

Data source: Computerised Infectious Diseases Reporting System (CIDR) 27/09/2024

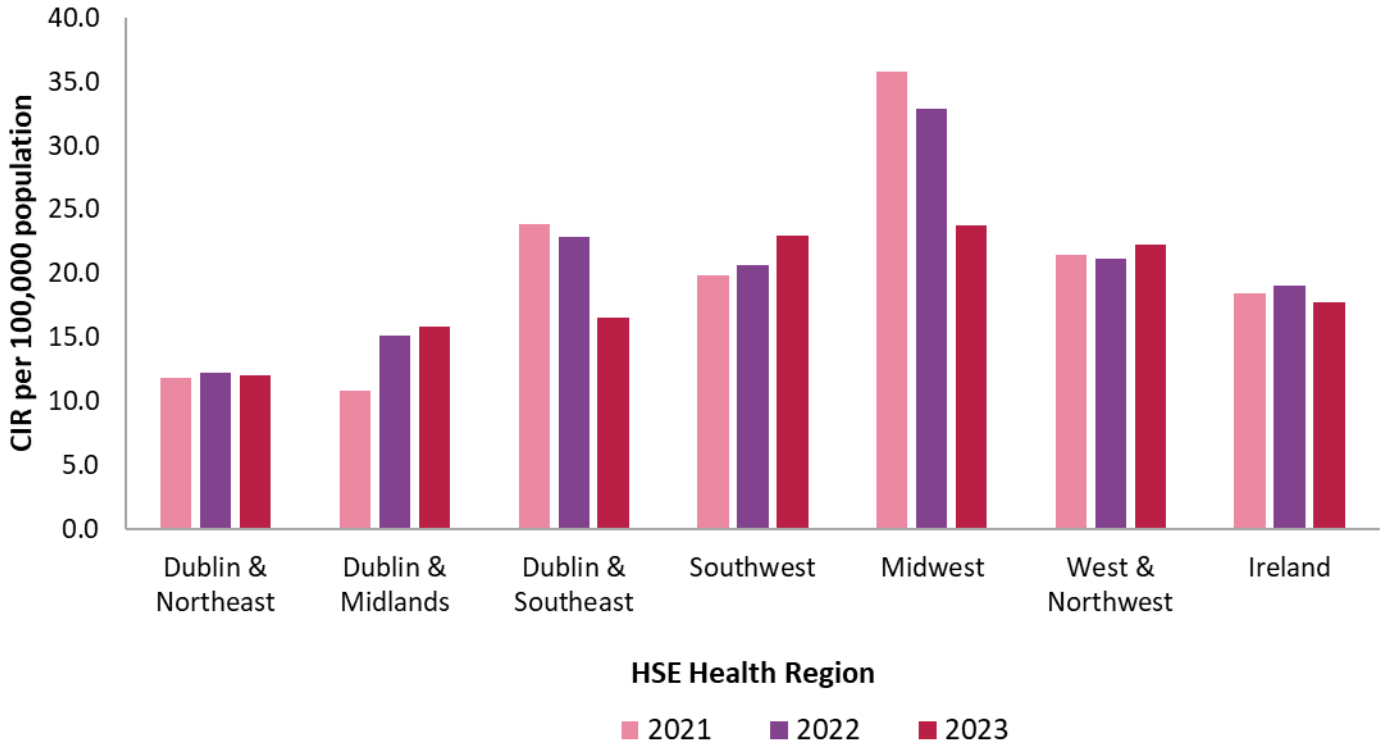
VTEC in Ireland: age and sex distribution, 2023



In 2023, 51% (n=466) of cases were female and 49% (n=446) were male. The highest age-specific incidence rate was among 0-4 year olds (89.4/100,000 population), followed by those aged over 65 years (30.9/100,000 population).

Data source: Computerised Infectious Diseases Reporting System (CIDR) 11/10/2024

VTEC in Ireland: geographical distribution, 2023



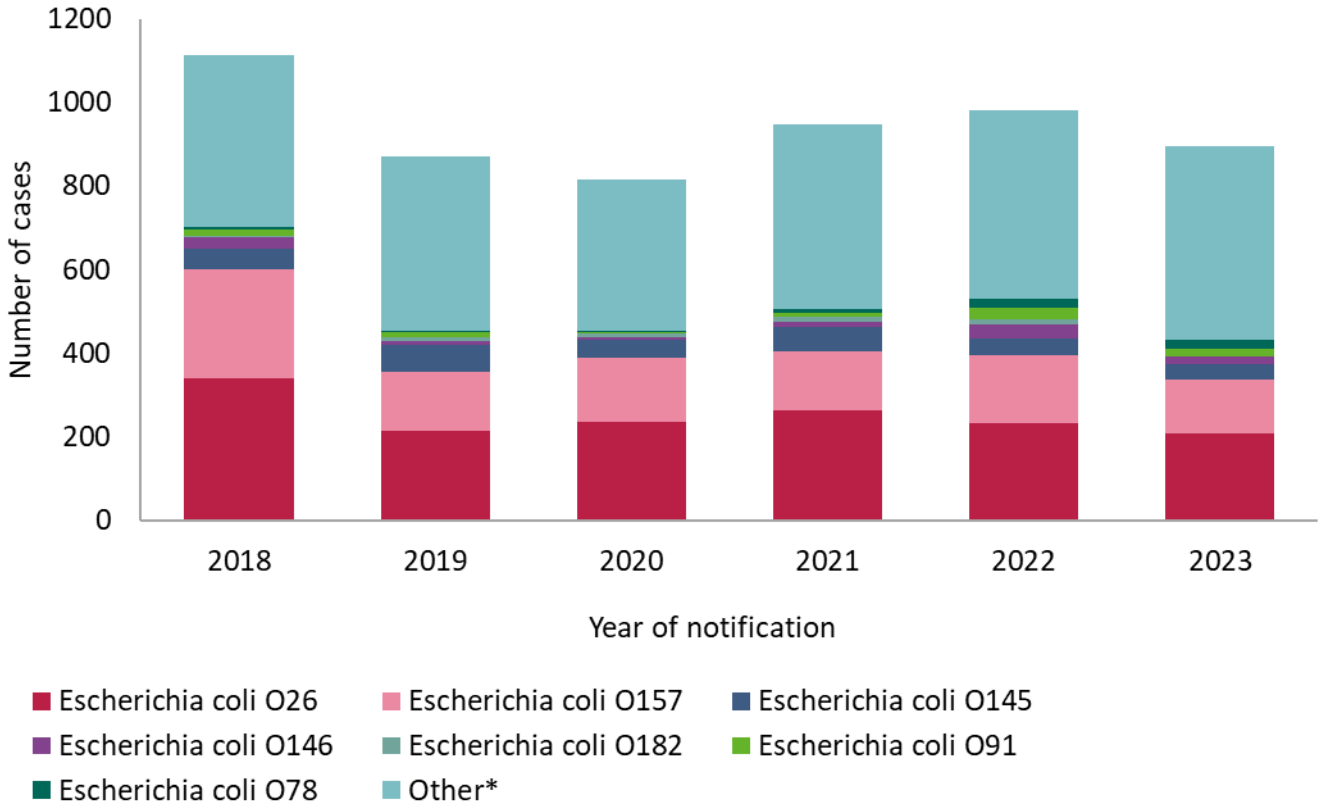
Data source: Computerised Infectious Diseases Reporting System (CIDR) 11/10/2024

No health region reported a large increase in the CIR in 2023 and a decrease in CIR was reported in a number of health regions in 2023.

In 2023, the highest CIR was reported in the HSE Midwest region (23.7/100,000) although this was a 28% decrease in the CIR in this region when compared to 2022.

*Trend data by HSE Health Region should be interpreted with caution due the re-organisation of HSE Healthboards to HSE Health Regions in 2022.

VTEC in Ireland: serogroups, 2018-2023



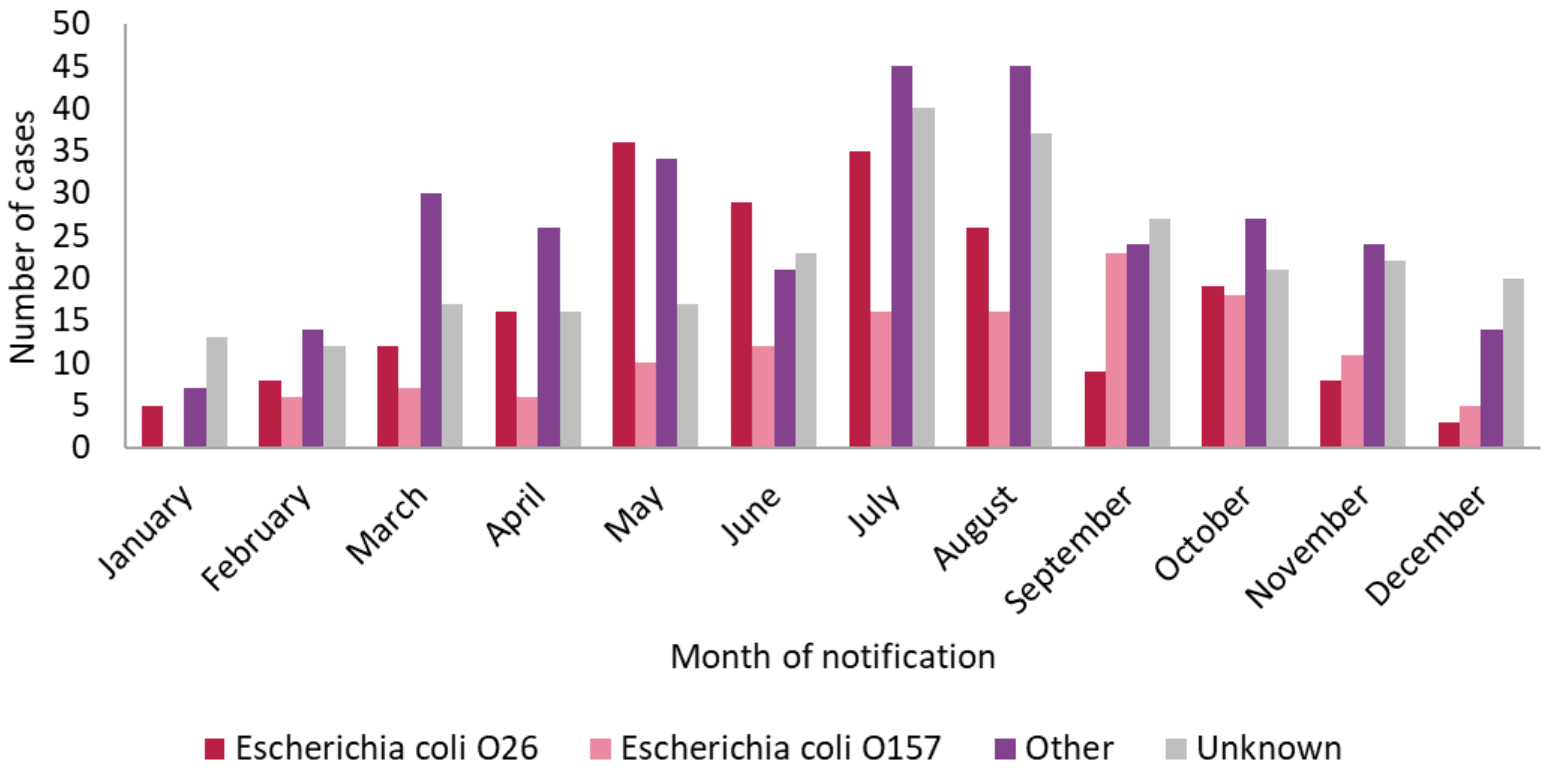
*Other includes cases notified as PCR positive culture negative as well as culture positive notifications with serogroups other than those listed.

Data source: Computerised Infectious Diseases Reporting System (CIDR) 14/10/2024 and Public Health Laboratory Cherry Orchard

The most common serogroup reported among culture confirmed cases in 2023 was O26 (23%; n=206), followed by O157 (14%; n=130). These proportions have remained largely unchanged since 2019.

Other commonly reported serogroups in 2023 were O145, O146, O78,O182 and O91.

VTEC in Ireland: seasonality of serogroups, 2023



Infections caused by VTEC O26 were more common earlier in the year, peaking in May, while infections caused by VTEC O157 became more common later in the year, exceeding the number of VTEC O26 infections in September, November and December.

This seasonal pattern is typical for both serogroups.

Data source: Computerised Infectious Diseases Reporting System (CIDR) 14/10/2024 and Public Health Laboratory Cherry Orchard

VTEC in Ireland: severity of illness, 2023

- In 2023, 84% (n=819) of cases were reported as symptomatic, comparable to previous years
- Of those reported as symptomatic and where data were known, diarrhoea was the most commonly reported symptom in 81% (n=736) of cases
- 39% (n=358) of all cases were hospitalised
  - 32% (n=67) of VTEC O26 cases
  - 38% (n=50) of VTEC O157 cases
  - 50% (n=17) of VTEC O145 cases
- Six deaths occurred among VTEC cases in 2023;three deaths were not caused by the VTEC infection while cause of death was not known for two cases and , 1 death was reported as due to this VTEC infection. Five of the cases who died were aged over 75 years.
- 27 cases of HUS were reported (3% of all cases), similar to 2.3% and 2.4% of cases reported in 2022 and 2021 respectively and a reduction from 4.4% of cases reported in 2020
  - 11% of O145 (n=4) cases developed HUS
  - 4% of O26 (n=8)
  - 2% of O157 (n=2)
  - None of O146 and O91 cases developed HUS
  - Other HUS cases were caused VTEC O128ac, O118, O111, O113, O55 (1 case each), were confirmed by PCR only (n=4) or were diagnosed based on being HUS cases without any lab or epi criteria confirming VTEC infection (n=4)

VTEC in Ireland: risk factors, 2022 and 2023

In Ireland, key risk factors for VTEC infection include exposure to private well water, animal/environmental exposures and attendance at a childcare facility (CCF). The most commonly reported risk factors in 2023 were animal/environmental contact (48%) and exposure to private well water (25%). Food and international travel play only minor roles in VTEC infection in Ireland, with most infections (94%) being non-travel related in 2023.

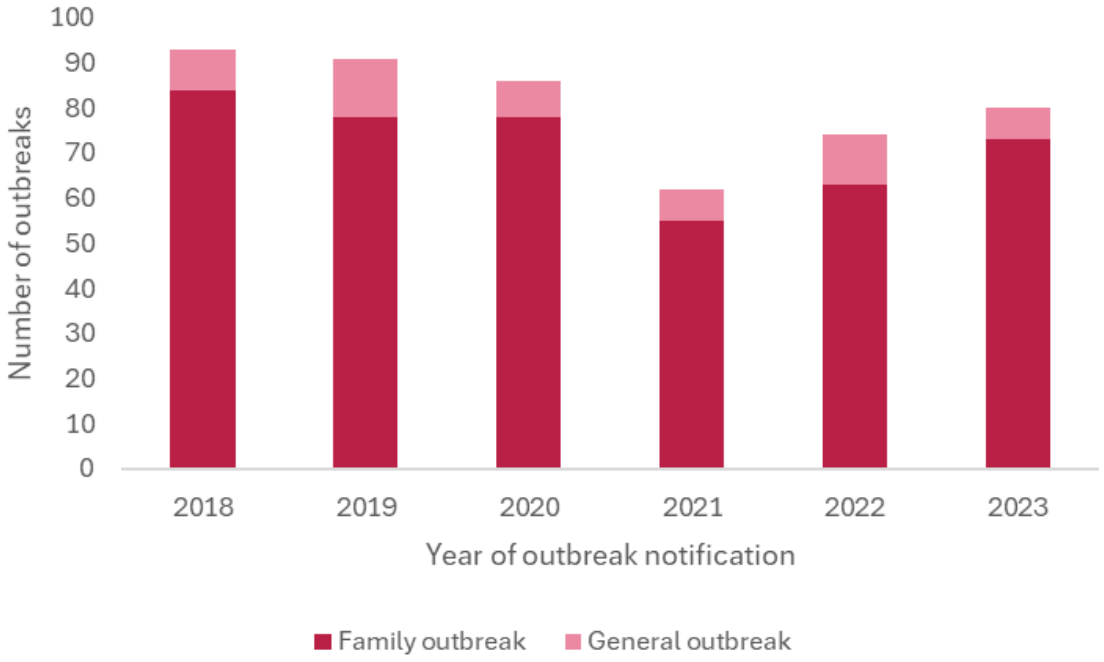
Risk Factor	2022			2023		
	Number	Number for which data were available	% where known	Number	Number for which data were available	% where known
Animal/Environmental contact[1]	64	179	**36%**	183	381	**48%**
Exposure to private well water (home source)[2]	222	833	**27%**	210	856	**25%**
Foodborne[1]	21	111	**19%**	40	381	**10%**
Travel-associated[3]	35	660	**5%**	48	859	**6%**

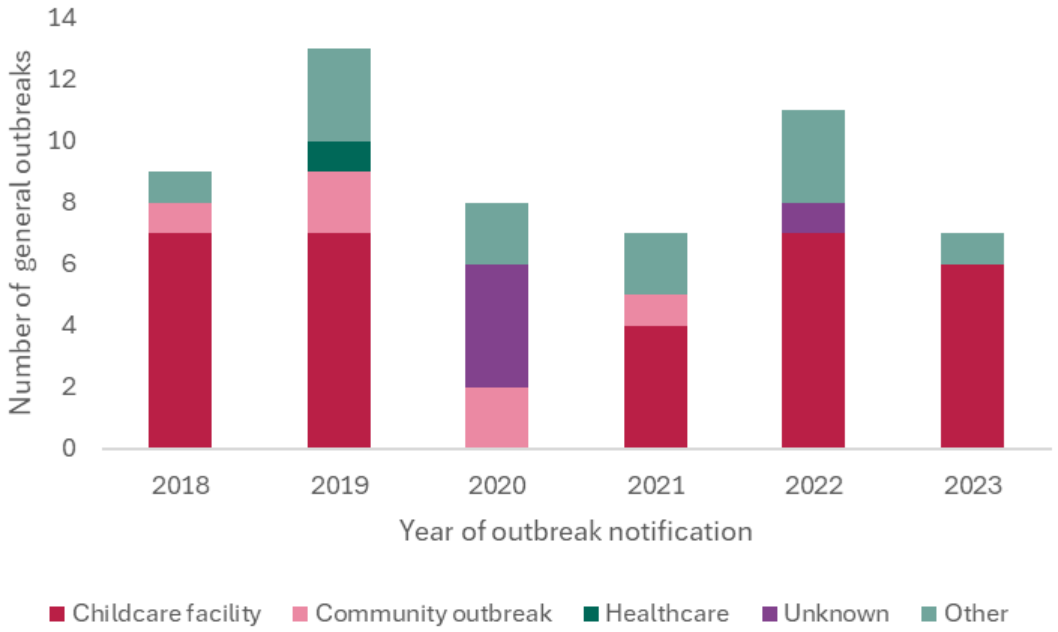
[1]Analysis based on “Suspected mode of transmission” enhanced variable
[2]Analysis based on “Home drinking water” enhanced variable
[3]Analysis based on “Country of infection” core variable

Data source: Computerised Infectious Diseases Reporting System (CIDR) 14/10/2024

VTEC in Ireland: outbreaks, 2018-2023

80 VTEC outbreaks, with a total of 191 people ill were notified in 2023 (7 general (29 ill) and 73 family (162 ill) outbreaks), similar to 2022 (78 outbreaks notified).
General outbreaks were most frequently reported in Childcare facilities (CCFs) accounting for a total of 6 outbreaks with 25 people ill (range 2-12) notified in 2023. The outbreak transmission mode was person to person for 5 of these outbreaks and unknown transmission reported for one CCF outbreak.

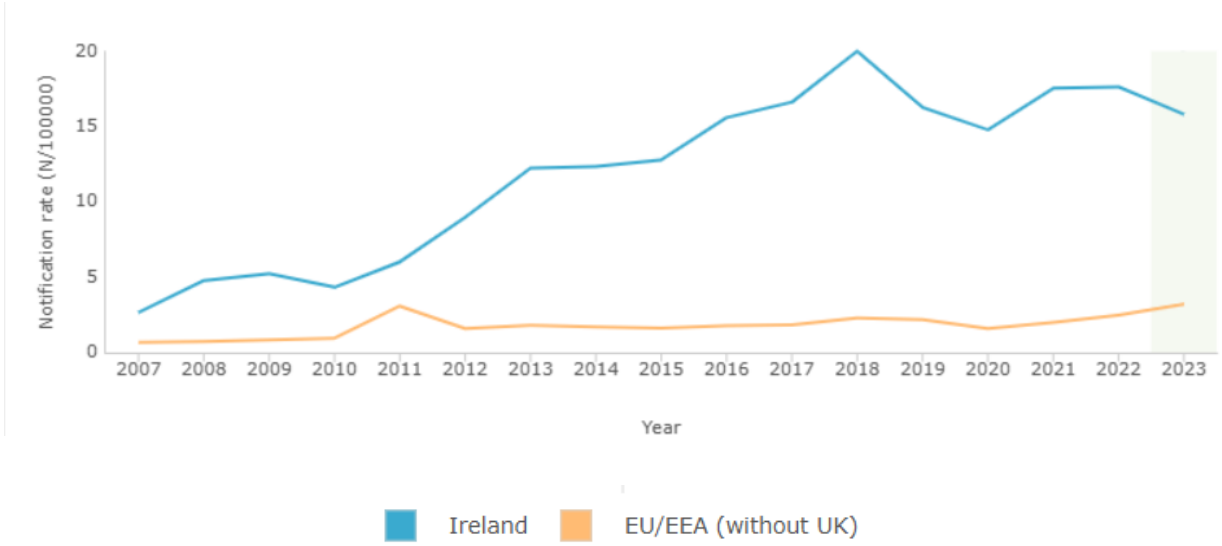


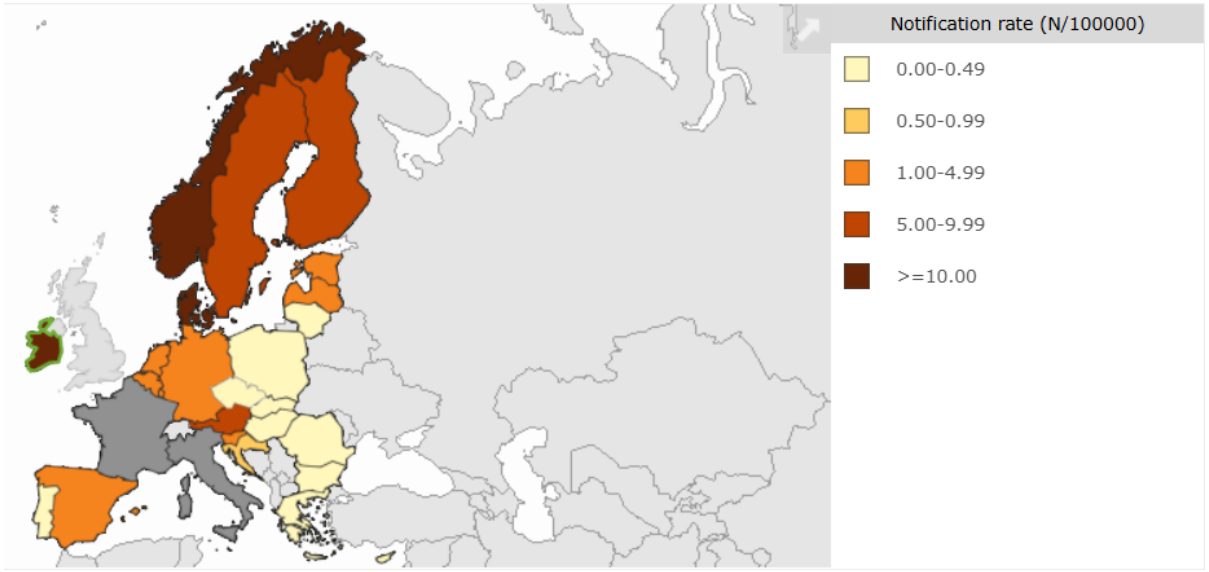


Data source: Computerised Infectious Diseases Reporting System (CIDR) 14/10/2024

VTEC in the EU/EEA, 2007-2023

In 2023, the VTEC notification rate in Ireland remained higher than the EU/EEA average notification rate (3.2/100,000) and was among the highest rates in Europe. In 2023, only the notification rates in Denmark and Liechtenstein were higher than Ireland.





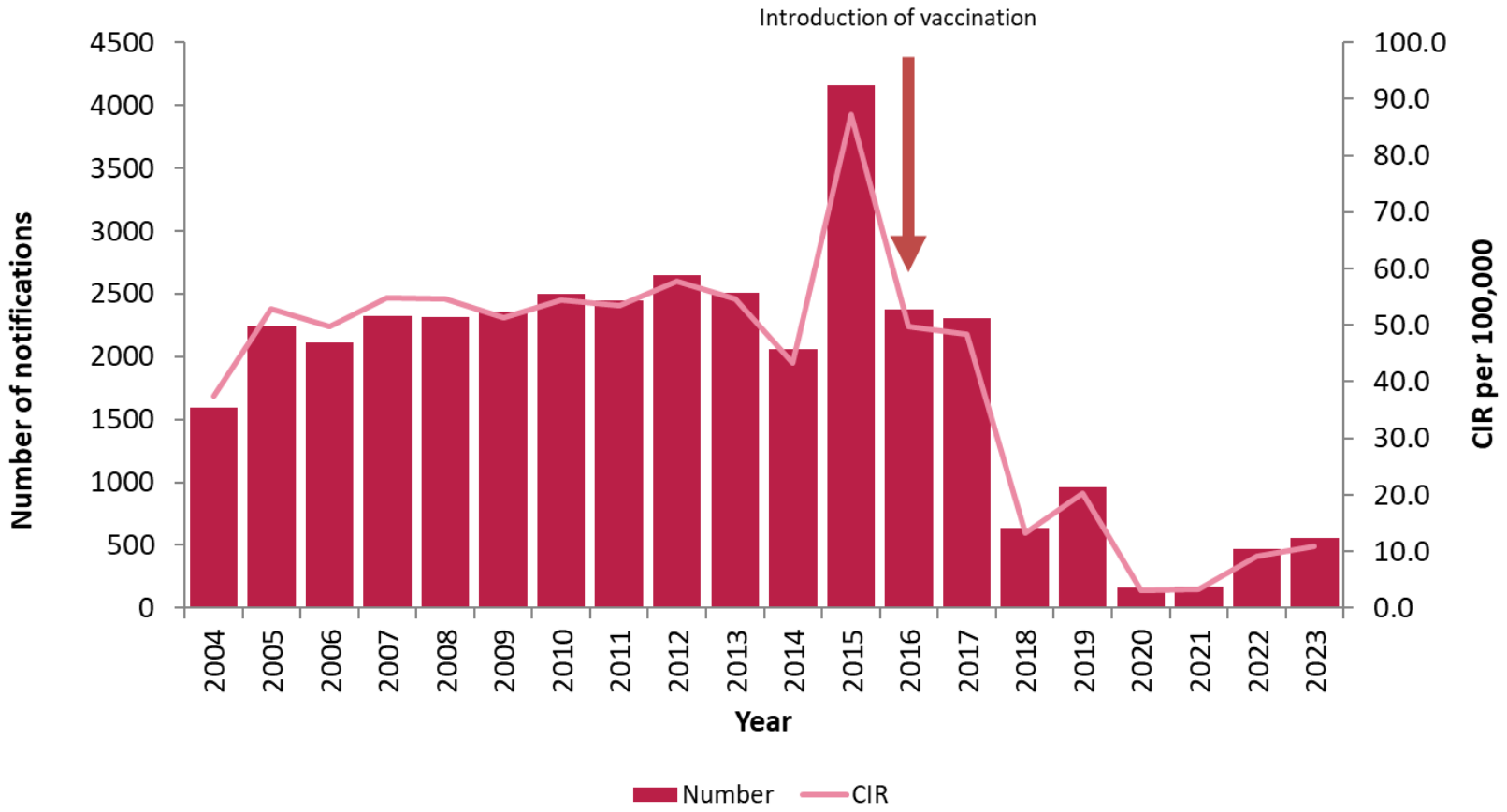
Data source: ECDC Surveillance Atlas of Infectious Diseases 13/01/2025

VTEC in Ireland, 2023 summary

- 912 cases of VTEC notified in 2023
- Notification rate in 2023 (17.7/100,000) was similar to 2022 (19.0/100,000)
- 33% of cases were children aged under 5 years and 21% were adults aged over 65 years
- The HSE Midwest region has reported the highest incidence rate since 2020
- VTEC O26 and O157 were the most commonly reported serogroups in 2023, unchanged from recent years
- 39% of all VTEC cases in 2023 were hospitalised
- 3% of all VTEC cases in 2023 developed HUS
- HUS was more frequently associated with O26 VT1&VT2 and VTEC O145 VT2 infections
- Animal/environmental exposures and exposure to private well water remained the most commonly reported risk factors among VTEC cases in 2023
- The number of VTEC outbreaks notified remained high in 2023 but the majority of outbreaks were small family outbreaks; childcare facilities remained the location where general VTEC outbreaks were most frequently notified
- The Irish VTEC notification rate remained one of the highest in Europe in 2023

Other IID in Ireland

Rotavirus in Ireland: trends, 2004-2023

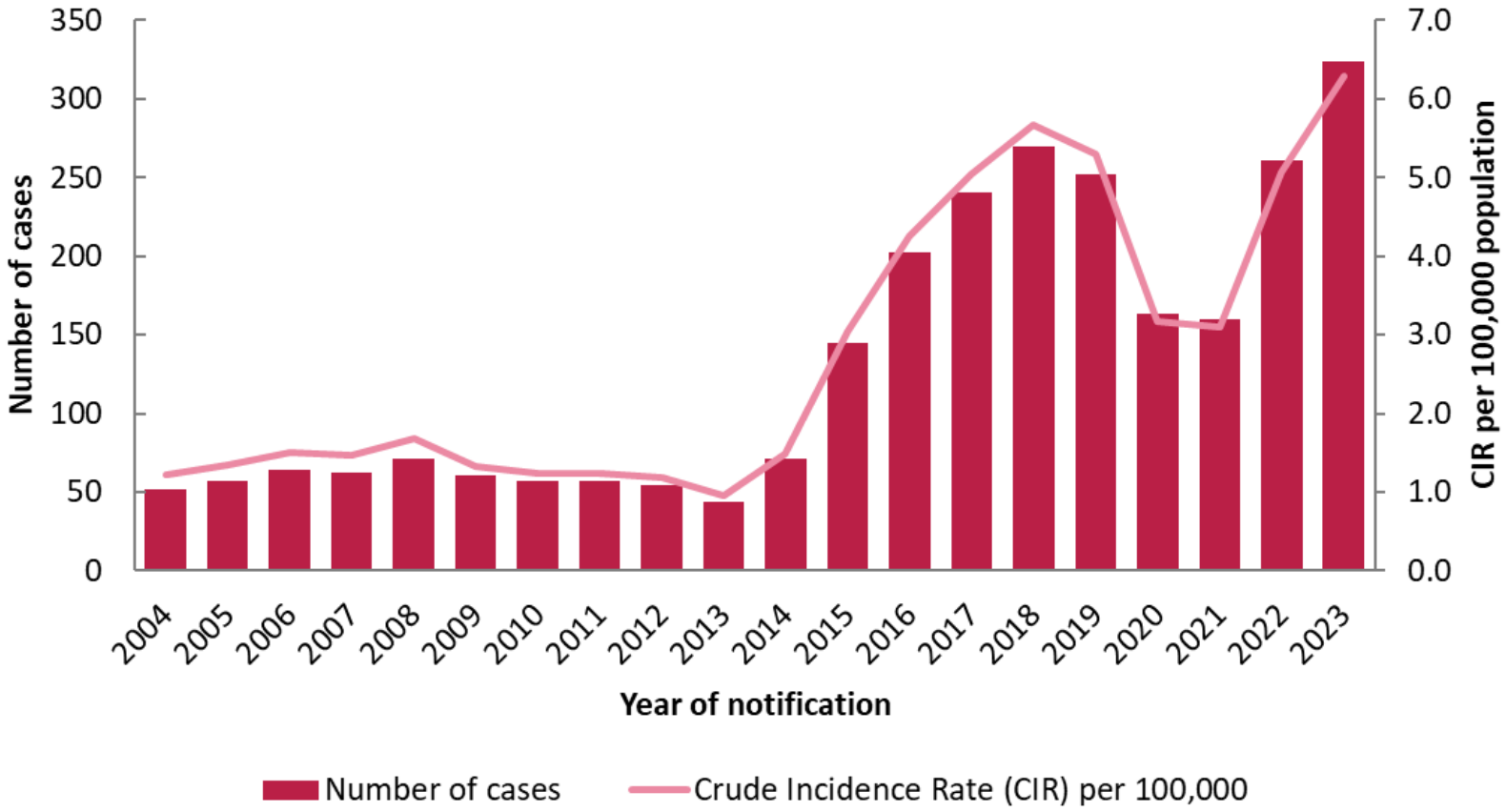


Data source: Computerised Infectious Diseases Reporting System (CIDR) 27/09/2024

In 2023, 560 Rotavirus cases were notified, giving a CIR of 10.9/100,000 which is a slight increase when compared to 2022 (9.1/100,000) but remains low compared to the pre-vaccine era.

Rotarix™ vaccine was introduced in Ireland in December 2016 for all babies born from 1st October 2016 onwards, likely accounting for the sharp decline in cases seen in 2018, however current vaccine uptake rates are sub optimal.

Giardiasis in Ireland: trends, 2004-2023



In 2023, 324 cases of salmonellosis were notified, giving a CIR of 6.3/100,000 population.

This was a 24% increase from the CIR in 2022 (5.1/100,000) and was the highest notification rate since 5.7/100,000 in 2018.

Data source: Computerised Infectious Diseases Reporting System (CIDR) 27/09/2024

Other IID in Ireland, 2019-2023

Disease Name	2019	2020	2021	2022	2023
Bacillus cereus food-borne infection or intoxication	1	1	0	3	0
Botulism	0	0	0	2	0
Clostridium perfringens (type A) food-borne disease	1	3	0	3	1
Yersiniosis	9	13	18	17	30
Total	**11**	**17**	**18**	**25**	**31**

No cases of cholera or staphylococcal food poisoning were notified between 2019-2023

Data source: Computerised Infectious Diseases Reporting System (CIDR) 27/09/2024

Other non-IID zoonoses in Ireland

Other Non-IID Zoonoses in Ireland, 2019-2023

Disease Name	2019	2020	2021	2022	2023
Brucellosis	0	0	0	1	5
Echinococcosis	0	0	1	1	1
Q fever	2	2	0	0	4
Toxoplasmosis	47	21	19	16	20
Total	**49**	**23**	**20**	**18**	**30**

No cases of anthrax, plague, rabies, or trichinosis were notified between 2019-2023

Data source: Computerised Infectious Diseases Reporting System (CIDR) 25/10/2024