Annual Epidemiological Report

Viral Meningitis in Ireland, 2023

Notification of Viral Meningitis, Not Otherwise Specified (NOS)

A report from the Vaccine Preventable Disease Team, HPSC[1]

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What are the key messages in this report?

There were 318 cases reported in 2023§. This is similar to 319 cases reported in 2022, but higher than average of 197 cases reported during the COVID-19 pandemic years (2020-2022).

Similar to 2022, the age group with the highest proportion of cases was under <1 year.

In 2023, the causative pathogen most frequently identified was enterovirus. This is similar to 2022.

§ Note: In weeks 32 and 34 of 2024, 34 late notifications were added to CIDR, 16 of which had laboratory dates from 2023 and have not been included in this summary.

Note: Census 2022 data was used to calculate rates

Number of cases by age and gender

- In 2023, 318 cases of viral meningitis (NOS) (VM) were notified in Ireland (6.2/100,000 population) compared to 319 (6.2/100,000) in 2022, 131 (2.5/100,000) in 2021, 142 (2.8/100000) in 2020 and 326 (6.8/100,000) in 2019.
- One explanation for the rise in numbers since 2019 can be attributable to the ending of the COVID-19 pandemic.
- There were more VM cases among males (n=168) than females (n=150) in 2023, an M:F ratio of 1:0.89, which was higher to that in 2022 with a M:F ratio of 1:0.81.
- In 2023, the median age of cases was 0.25 years (or 13.2 weeks) (range 2 days to 97 years): of the 318 cases, 188 (59.1%) were aged between 0-4 years of age, and 176 (55.4%) were aged <1 year.
- In comparison, 319 cases were reported in 2022 (median age 0.17 years), of which 209 (65.5%) were aged between 0-4 years, and 200 (62.9%) were aged <1 year (Table 1).

Note:
See slide 10, Appendix for Table 1

Causative agents

- All but five of the 318 VM cases in 2023 were case classified as confirmed. All but 47 (14.8%) had a causative pathogen identified: Enterovirus (n=210, 66.0%), varicella zoster virus (VZV) (n=23; 7.2%), herpes simplex virus (HSV) (n=9; 2.8%) (one type 1 and six type 2) and other including Human Herpes Virus type 6 (HHV 6) (n=22, 6.9%) and parechovirus (n=6; 1.8%).
- In comparison, among the 319 VM cases in 2022, all but 71 (22.2%) had a causative pathogen identified: 173 cases of Enterovirus (54.2%), 22 (6.8%) cases of VZV, 15 (4.7%) HSV (two type 1 and eight type 2) and other including 24 HHV 6 (7.5%) and 14 parechovirus cases (4.3%).
- Compared to 2022, there were fewer cases in 2023 with no causative organisms identified and a greater proportion attributable to enterovirius.
- Caution is advised regarding the detection of HHV 6 DNA in cerebral spinal fluid (CSF) specimens, especially in those cases aged less than three months as HHV 6 DNA can be chromosomally integrated and therefore it may not be clinically relevant. Of the 22 cases of HHV 6-related encephalitis in 2023 however, seven (31.8%) occurred in patients less than three months of age.

What are the key messages in this report?

(Continued)

Enterovirus typing results

- In 2019, all but 79 (2.7%) of the 255 enterovirus-related VM cases were typed, but between 2020 and 2023, 453 (98.1%) of 462 cases were not.

Area

- Most VM cases in HSE Dublin & Midlands region, but the the highest rate was in HSE Mid West region (Figures 4-5).

What background information is relevant when reading this report?

- Meningitis due to viruses not otherwise specified (NOS) are notifiable under the disease category ‘viral meningitis’. Details of viral meningitis caused by other specified notifiable diseases (such as mumps and influenza viruses, if any) are presented in other annual reports by HPSC.
- The figures presented in this report are based on data extracted from the Computerised Infectious Disease Reporting (CIDR) system on 27th August 2024.

Results
Part 1 of 3

Age and Causative Pathogen

The distribution of VM cases is heavily skewed with 63.6% (n=188 /318) of cases in 2023 in the 0-4 age group (Figures 1 and 2) with 59.4% attributable to enterovirus.

Note: Census 2022 data was used to calculate rates

Figure 1 Number of viral meningitis (NOS) cases by age group and causative pathogen group, Ireland, 2023

Other/Unknown = includes HHV 6, parechovirus and adenovirus related meningitis and viral meningitis attributable to unspecified viruses

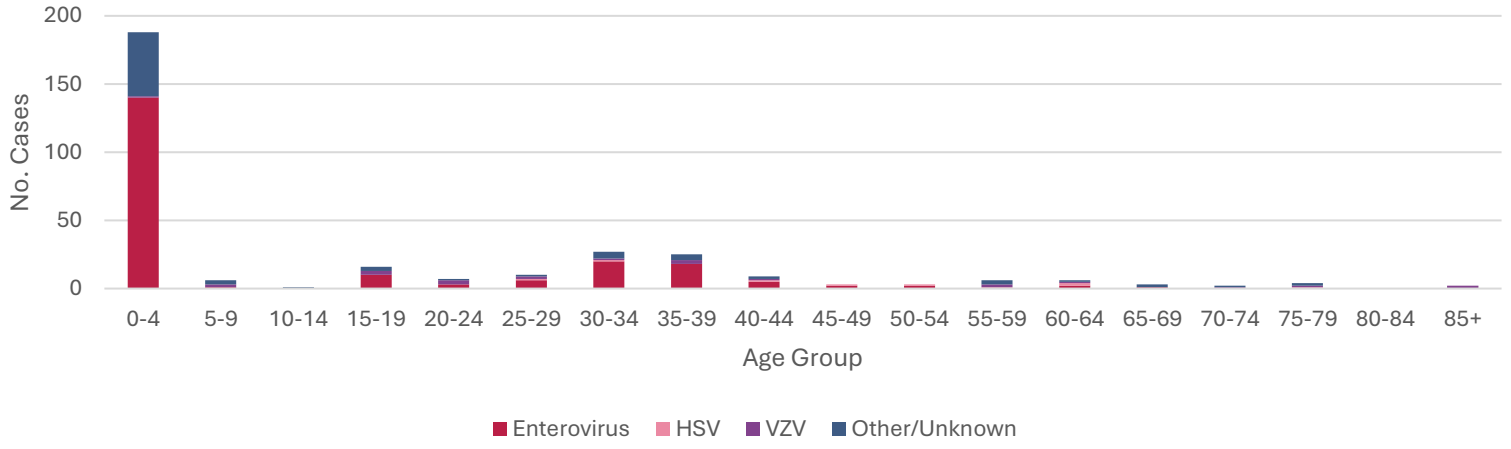
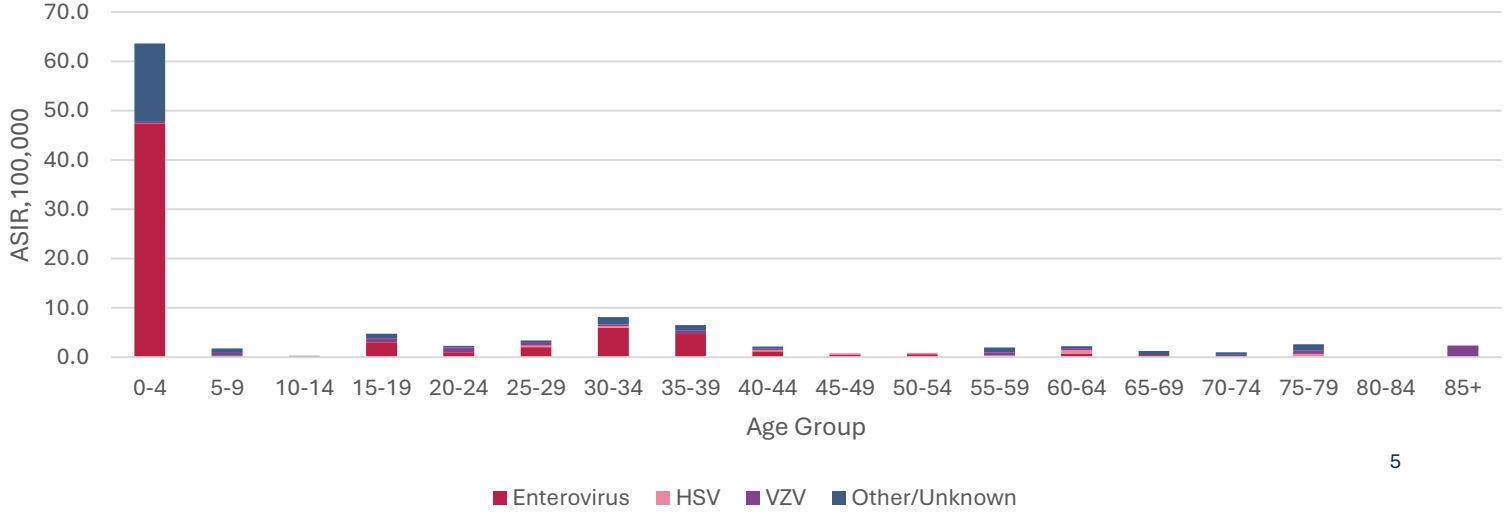


Figure 2 Age-specific incidence rates per 100,000 of viral meningitis (NOS) cases by age group and causative pathogen, Ireland, 2023

Other/Unknown = includes HHV 6, parechovirus and adenovirus related meningitis and viral meningitis attributable to unspecified viruses



Results
Part 2 of 3

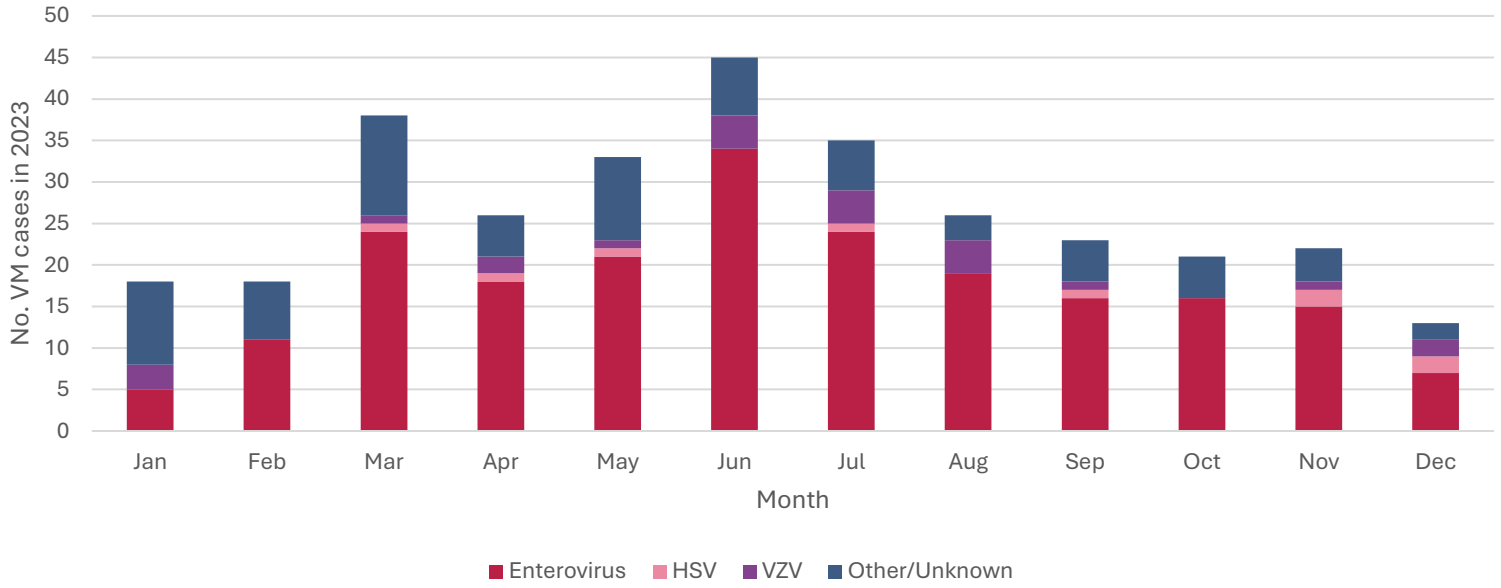
Seasonality and Causative Pathogen

The frequency of VM cases typically is highest in the summer months.

In 2023,June was the month where most cases were notified (Figure 3).

Figure 3 Numbers of viral meningitis (NOS) cases by causative pathogen and month of year, Ireland, 2023

Other/Unknown = includes HHV 6, parechovirus and adenovirus related meningitis and viral meningitis attributable to unspecified viruses



Results
Part 1 of 3

Area and Causative Pathogen

In 2023, even though the reported number of VM cases was highest in the HSE Dublin & Midlands region, the incidence rate was highest in the Mid West region (Figures 4, 5).

Note: Census 2022 data was used to rates

Figure 4 Number of viral meningitis (NOS) cases by HSE Health Region and Causative Pathogen, Ireland, 2023

Other/Unknown = includes HHV 6, parechovirus and adenovirus related meningitis and viral meningitis attributable to unspecified viruses

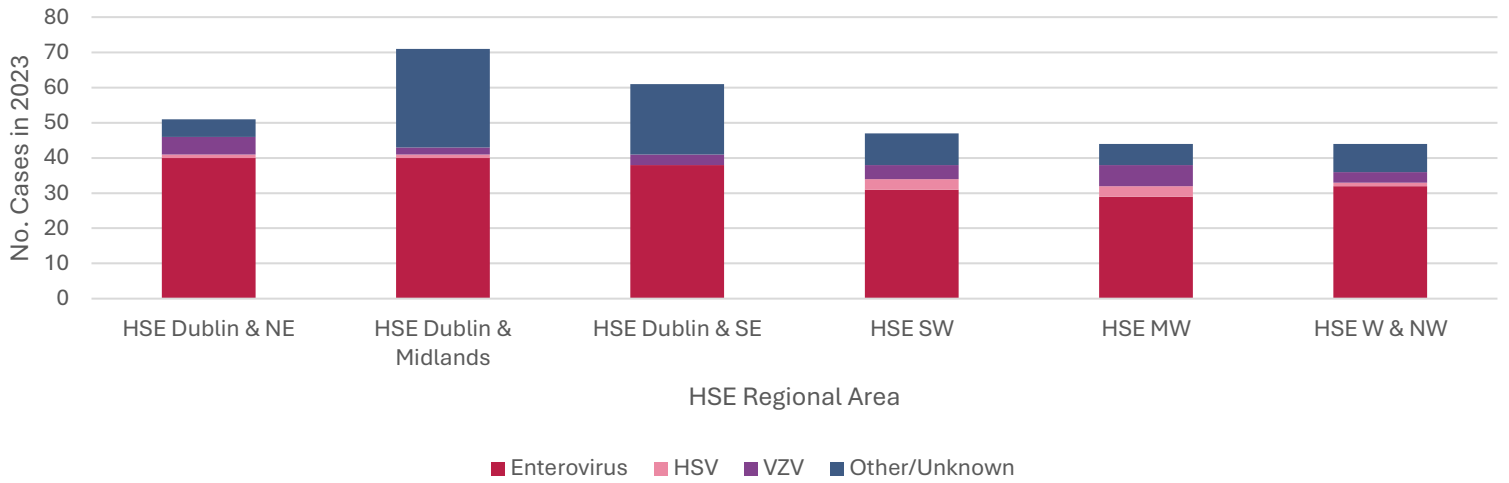
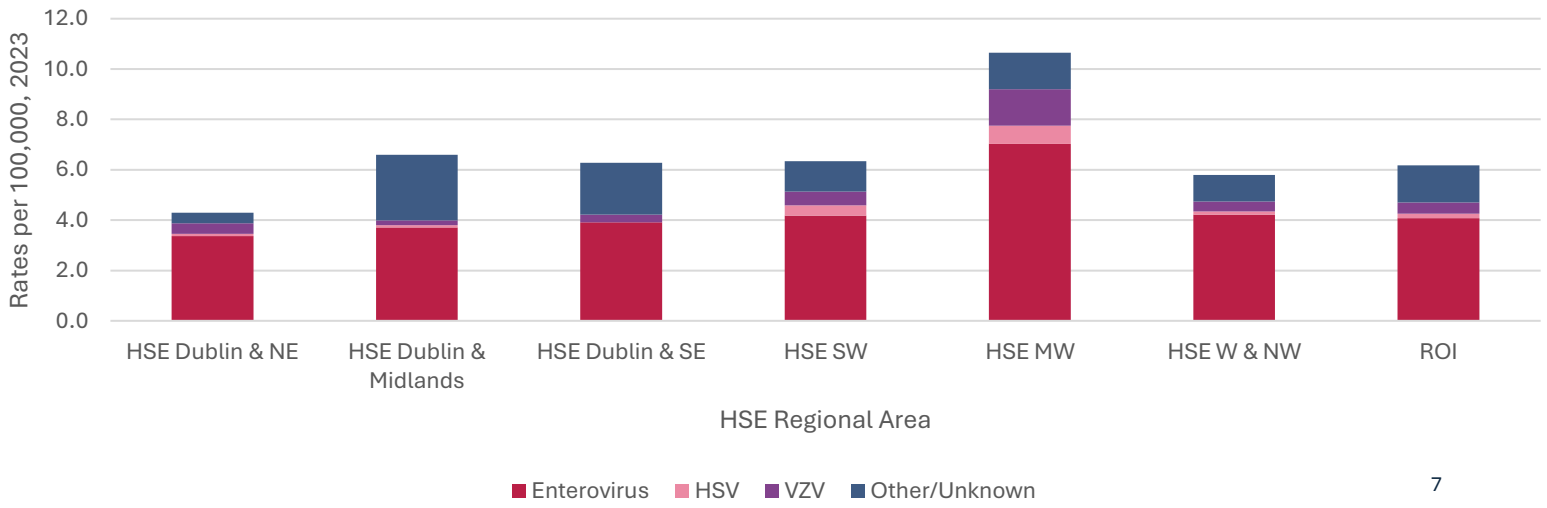


Figure 5 Incidence rates per 100,000 of viral meningitis (NOS) cases by HSE Health Region and Causative Pathogen, Ireland, 2023

Other/Unknown = includes HHV 6, parechovirus and adenovirus related meningitis and viral meningitis attributable to unspecified viruses



What can we interpret from the data in this report in this report?

Age Distribution

+ By far, most cases of VM occur in the <1 year age group (with the next highest number of cases, albeit at a much lower level, in the 15-19 and 30-39 year old age groups).

Summer peak in Cases

+ Typically, the highest number of cases occurs in mid-summer, so clinicians should be alert to that likelihood each year.

Enterovirus typing

+ The current absence of this service mean that, potentially, enterovirus type specific clusters cannot be identified.

What do I need to know about how the data for this report was collected?

There are limitations in these data.

1. There is currently no enhanced surveillance reporting associated with viral meningitis, NOS, in Ireland.
2. In 2017, the National Virus Reference Laboratory (NVRL) introduced enterovirus typing, but one of the consequences of the COVID-19 pandemic was that routine typing was suspended in early 2020 and hasn't resumed since.
3. Varicella related viral meningitis can occur at the same time as chickenpox or shingles or it can occur on its own without any rash or skin manifestation. However, only hospitalised cases of chickenpox are notifiable and shingles are not.
4. A number of late notifications were added to CIDR in 2024, some of which had laboratory dates from 2023 and have not been included in this summary.

Appendix

Table 1 Number and age specific incidence rates per 100000, population of viral meningitis (NOS) cases by age group and causative pathogen, Ireland, 2023

Abbreviations

HHV 6 = human herpes virus type 6
HSV = herpes simplex virus
VZV = varicella zoster virus

Table 1. Number of viral meningitis (NOS) cases by age group and causative pathogen, Ireland, 2023
*Other = includes HHV 6, parechovirus and adenovirus related meningitis

	No. Cases						Age specific incidence rates per 100000, population				
Age Group	Enterovirus	HSV	VZV	Other/ Unknown	Total	% Frequency	Enterovirus	HSV	VZV	Other/ Unknown	Total
0-4	140	0	1	47	188	59.1	47.4	0.0	0.3	15.9	63.6
5-9	1	0	2	3	6	1.9	0.3	0.0	0.6	0.9	1.8
10-14	0	0	0	1	1	0.3	0.0	0.0	0.0	0.3	0.3
15-19	10	0	3	3	16	5.0	3.0	0.0	0.9	0.9	4.7
20-24	3	0	3	1	7	2.2	1.0	0.0	1.0	0.3	2.3
25-29	6	1	2	1	10	3.1	2.0	0.3	0.7	0.3	3.4
30-34	20	1	1	5	27	8.5	6.0	0.3	0.3	1.5	8.1
35-39	18	0	3	4	25	7.9	4.7	0.0	0.8	1.0	6.5
40-44	5	1	1	2	9	2.8	1.2	0.2	0.2	0.5	2.2
45-49	2	1	0	0	3	0.9	0.5	0.3	0.0	0.0	0.8
50-54	2	1	0	0	3	0.9	0.6	0.3	0.0	0.0	0.9
55-59	0	1	2	3	6	1.9	0.0	0.3	0.7	1.0	2.0
60-64	2	2	1	1	6	1.9	0.7	0.7	0.4	0.4	2.2
65-69	1	0	0	2	3	0.9	0.4	0.0	0.0	0.8	1.3
70-74	0	0	1	1	2	0.6	0.0	0.0	0.5	0.5	1.0
75-79	0	1	1	2	4	1.3	0.0	0.6	0.6	1.3	2.6
80-84	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0
85+	0	0	2	0	2	0.6	0.0	0.0	2.4	0.0	2.4
Unknown	0	0	0	0	-	-	-	-	-	-	-
Total	**210**	**9**	**23**	**76**	**318**	100.0	**4.1**	**0.2**	**0.4**	**1.5**	**6.2**
% Total	66.0	2.8	7.2	23.9	100.0	100.0					

Note: Census 2022 data was used to calculate rates

Other Resources

Acknowledgements

HPSC wishes to thank all who provided data for this report: Departments of Public Health, National Virus Reference Laboratory (NVRL) and other Microbiology Laboratories

Further information available on HPSC website:

https://www.hpsc.ie/a-z/respiratory/viralmeningitis/

Case definition: https://www.hpsc.ie/a-z/vaccinepreventable/viralmeningitis/casedefinitions/

HPSC National ID Hub: https://infectious-diseases-hpscireland.hub.arcgis.com/

Fact sheet: https://www.hpsc.ie/a-z/vaccinepreventable/viralmeningitis/factsheet/