

Viral Encephalitis in Ireland, 2023

Notification of Viral Encephalitis, Not Otherwise Specified (NOS)

A report from the Vaccine Preventable Disease Team, HPSC¹

Report prepared by: Piaras O'Lorcain, Michael Carton, Eimear Keane, VPD team

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Health Protection Surveillance Centre, 25-27 Middle Gardiner St, Dublin 1 Ireland.

t: +353 1 8765300

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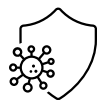
What are the key messages in this report?

There were 62 cases reported in 2023. This is far more than the 37 cases reported in 2022 (which was the lowest number of cases since 2013 when six cases were reported).

Unusually, there were 11 cases in the 0-4 year age group in 2023, compared to none in either 2022, and 2021, but the latter may have been a consequence of the COVID-19 pandemic in those years because there was an average of 7.3 cases between 2013 and 2020 in the same age group.

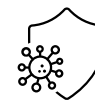
In 2023, the causative pathogen most frequently identified was varicella. This is similar to 2022 and previous years.

*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. One of the 11 cases of HHV 6-related encephalitis in 2023 however, occurred in a patient less than three months of age.



Number of cases by age and gender

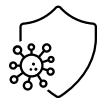
- + In 2023, 62 cases of viral encephalitis (NOS) (VE) were notified in Ireland (1.20/100,000 population) compared to 37 (0.72/100,000) in 2022, 64 (1.24/100,000) in 2020 and 48 (0.93/100,000) in 2020. One contributing factor to the increase in cases in 2023 is attributable to the 11 cases of human herpes virus type 6* in 2023 compared to none in 2022 as well as the marked increase in cases under <1 year of age (Figures 1-2 and Table 1).
- + There were more VE cases among males (n=35) than among females (n=27) in 2022, an M:F ratio of 1:0.77, which was a little less than that in 2022 with a M:F ratio of 1:0.85.
- + In 2023, the median age of cases was 44.4 years (range 1 month to 84 years): 13 (16.6%) cases each in those aged <15 years and 15-39 years, 19 (30.6%) cases in those aged 40-64 years and 17 (27.4%) cases in those age 65+ years.
- + In comparison, in 2022, the median age was far higher at 72.2 years: zero (0.0%) cases in those aged <15 years, nine (24.3%) cases in those aged 15-39 years, five (13.5%) cases in those aged 40-64 years and 23 (62.2%) cases in those age 65+.



Causative agents and age

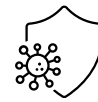
- + All but two of the 62 VE cases in 2023 were case classified as confirmed. All but nine (14.5%) had a causative pathogen identified: VZV (n=28; 45.2%), herpes simplex virus (HSV) (n=11; 17.7%, nine type 1 and two type 2) and human herpes virus type 6 (HHV 6)* (n=11; 17.7%).
- + Among the 149 VE cases between 2020 and 2022, all but 29 (19.5%) had a causative pathogen identified: 76 (51.0%) cases of VZV, 42 (28.2%) HSV (32 type 1, 10 type 2) with one case of HHV 6 (0.7%) reported in this period (6 months of age) (Table 1).
- + Among the 17 VE cases aged ≥65 years in 2023, there were nine (52.9%) cases of VZV, three cases each of HSV (type 1) and HHV 6 ((Table 1).
- + In contrast, in 2022, 23 VE cases aged ≥65 years, there were ten (43.5%) cases of VZV and seven (30.4%) HSV (type 1).

What are the key messages in this report? (Continued)



Outcome

- + Outcome in 2023 was poorly recorded with 3.2% of cases (n=2/62) with no deaths occurred. In contrast, outcome was recorded for 8.7% of cases (n=13/149) between 2020 and 2022. There was one reported death in 2021: a 70–74-year-old with a HSV type1 infection.



Area

- + Most VE cases occurred in HSE Dublin & North East, HSE Dublin & South East and HSE West & North West regions, but the highest rates were in HSE Mid West and West & HSE North West regions (Figures 4-5)

What background information is relevant when reading this report?

- + Encephalitis caused by viruses are notifiable under the disease category 'viral encephalitis'. Details of viral encephalitis cases caused by other notifiable diseases, if any, are presented in other annual reports.
- + The figures presented in this report are based on data extracted from the Computerised Infectious Disease Reporting (CIDR) system on 27th August 2024.



Age and Causative Pathogen

The distribution of VE cases is skewed to an extent with 16.1% (n=10 /62) of cases in 2023 in the 0-4 age group with 60% attributable to HHV 6*, one of which was <3 months of age. However, the highest incidence rates were in the 75-79 and 80-84 year age groups (Figures 1 and 2) .

*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. One of the 11 cases of HHV 6-related encephalitis in 2023 however, occurred in a patient less than three months of age.

Note: Census 2022 data was used to calculate rates

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

Other/Unknown = enterovirus, parechovirus and tick-borne related encephalitis and and viral encephalitis attributable to unspecified viruses

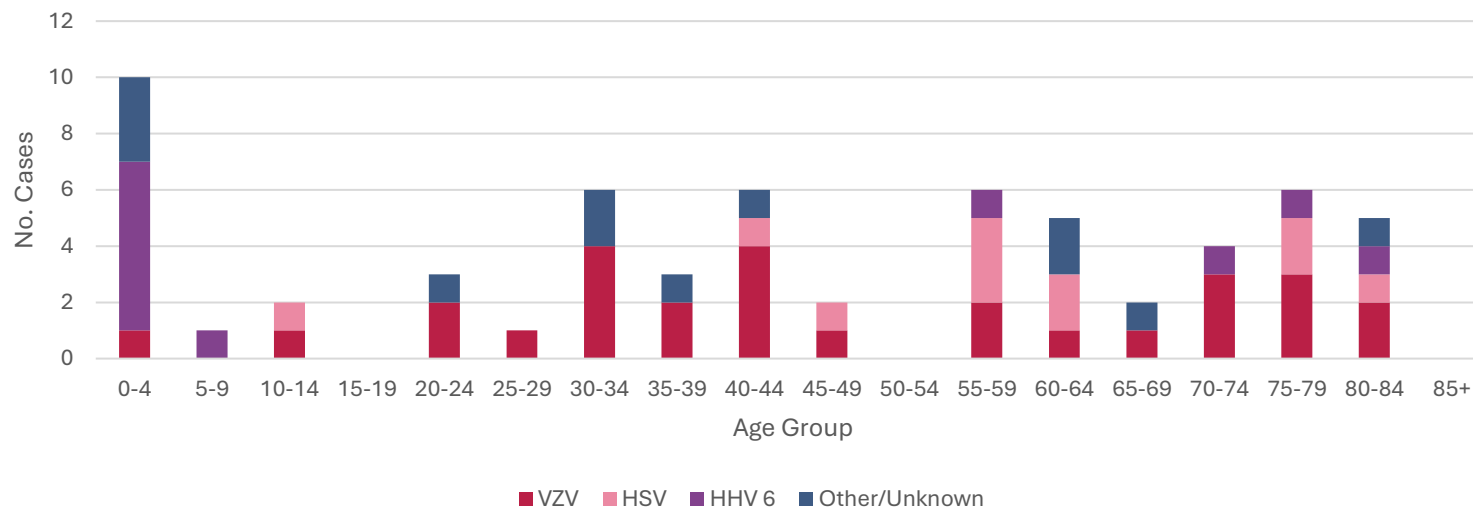
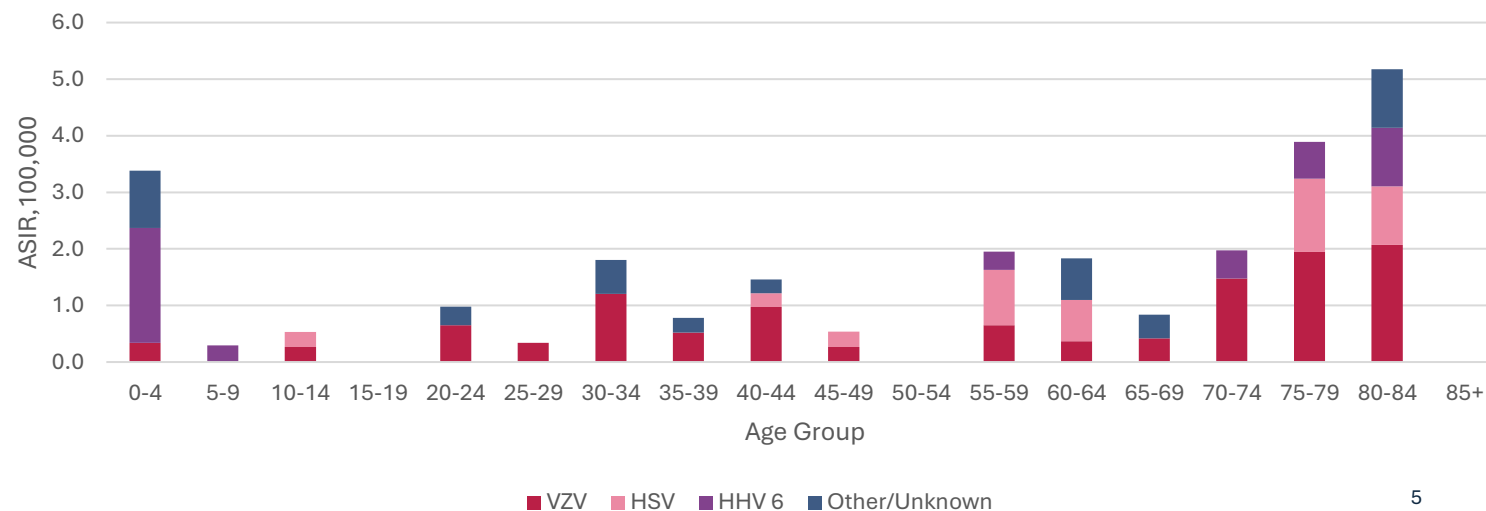


Figure 2 Age-specific incidence rates of viral encephalitis (NOS) cases by causative pathogen, Ireland, 2023

Other/Unknown = enterovirus, parechovirus and tick-borne related encephalitis and and viral encephalitis attributable to unspecified viruses



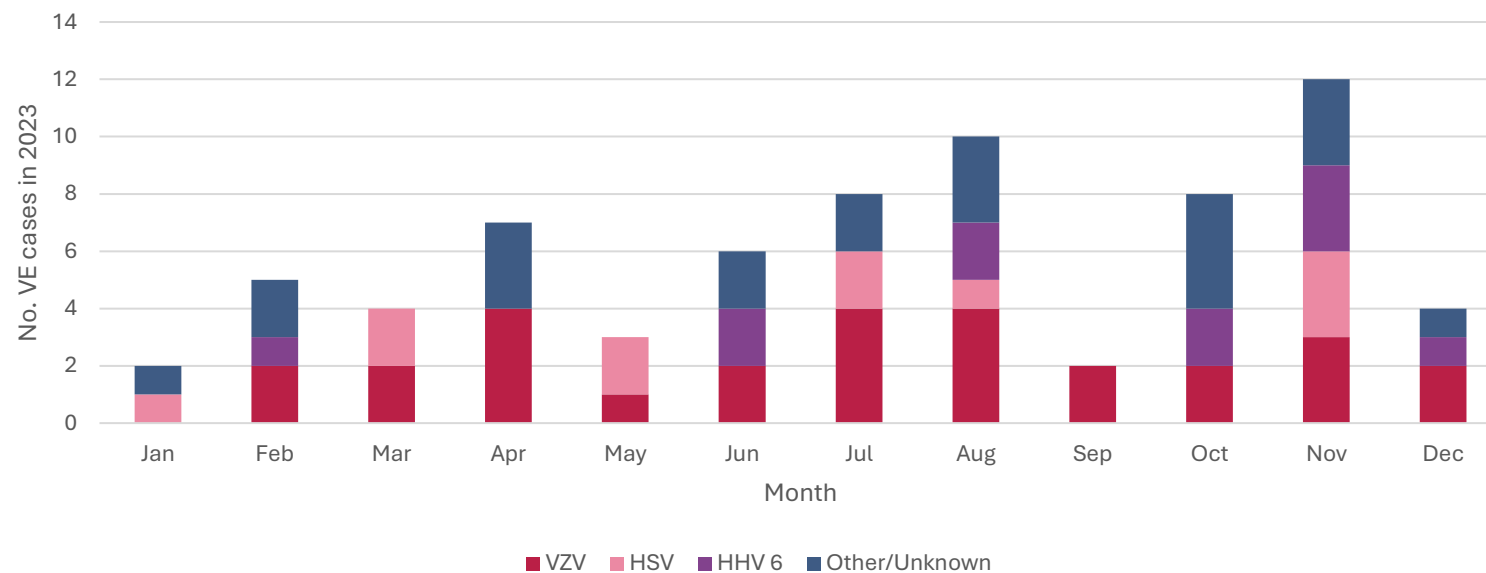


Seasonality and Causative Pathogen

In 2023 the frequency of VE cases was highest in the month of the November with the occurrence of VZV related cases being reported in each month except January (Figure 3).

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

Other/Unknown = enterovirus, parechovirus and tick-borne related encephalitis and and viral encephalitis attributable to unspecified viruses





Area and Causative Pathogen

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

Note: Census 2022 data was used to calculate rates

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

Other/Unknown = enterovirus, parechovirus and tick-borne related encephalitis and and viral encephalitis attributable to unspecified viruses

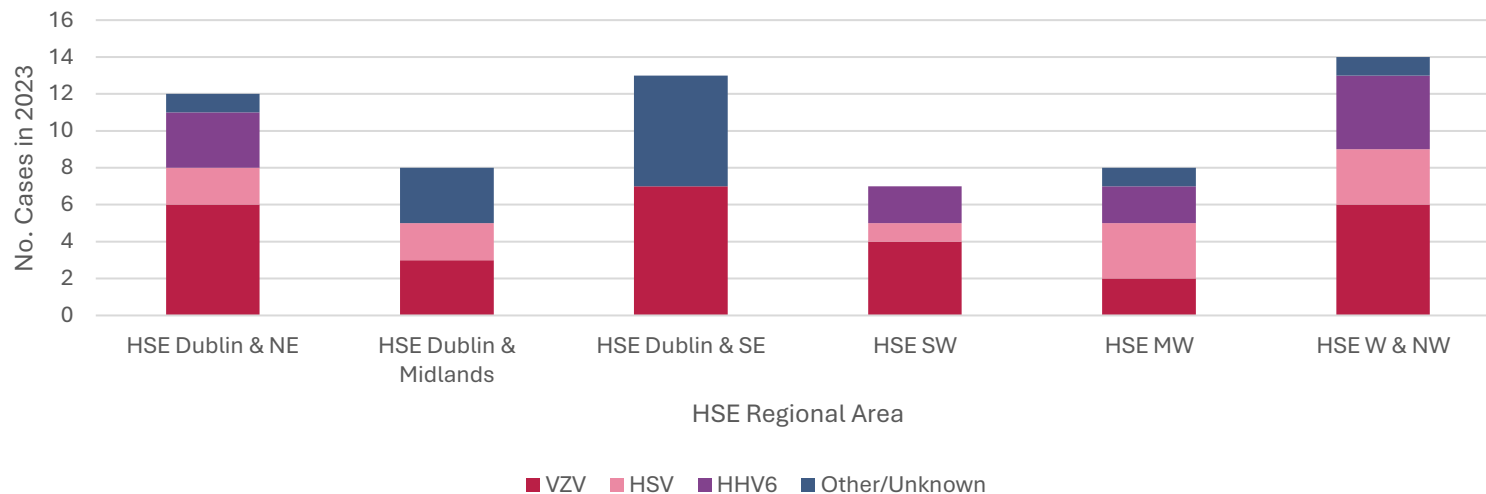
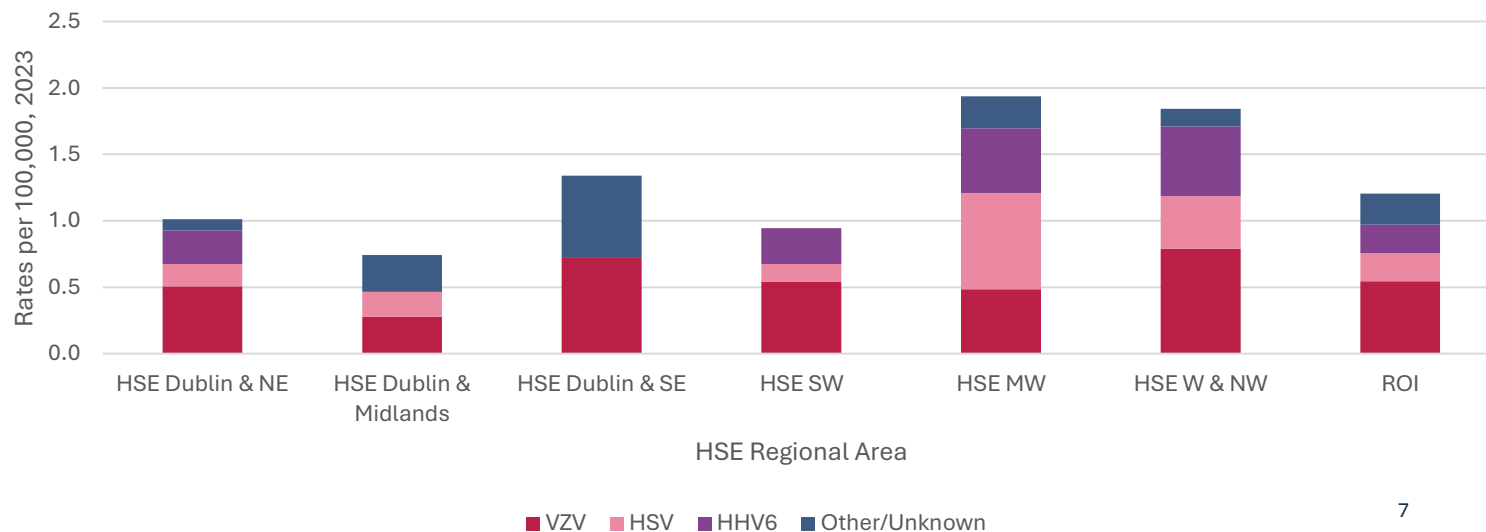
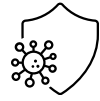


Figure 5 Age-specific incidence rates of viral meningitis (NOS) cases by HSE Health Region and Causative Pathogen, Ireland, 2023

Other/Unknown = enterovirus, parechovirus and tick-borne related encephalitis and and viral encephalitis attributable to unspecified viruses

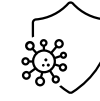


What can we interpret from the data in this report in this report?



Age Distribution

- + In 2023 the highest number of VE cases occurred in the <10 year age group but the incidence was highest in the 80-84-year-old age group



Annual Peak in Cases

- + The highest recorded number of cases was in November although the occurrence of VZV cases is more dispersed throughout the year

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 encephalitis, NOS, in Ireland.
2. Varicella related viral encephalitis often occurs alongside the characteristic rash of chickenpox or shingles, it can also manifest without this rash. However, only hospitalised cases of chickenpox are notifiable and shingles are not.

Table 1 Number of viral encephalitis (NOS) cases by age group and causative pathogen

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

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

	No. Cases						ASIR				
	2023	2023	2023	2023	2023	2023	2023	2023	2023	2023	2023
Age Group	VZV	HSV	HHV 6	Other/Unknown	Total	% Frequency	VZV	HSV	HH6 6	Other/Unknown	Total
0-4	1	0	6	3	10	16.1	0.3	0.0	2.0	1.0	3.4
5-9	0	0	1	0	1	1.6	0.0	0.0	0.3	0.0	0.3
10-14	1	1	0	0	2	3.2	0.3	0.3	0.0	0.0	0.5
15-19	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0
20-24	2	0	0	1	3	4.8	0.7	0.0	0.0	0.3	1.0
25-29	1	0	0	0	1	1.6	0.3	0.0	0.0	0.0	0.3
30-34	4	0	0	2	6	9.7	1.2	0.0	0.0	0.6	1.8
35-39	2	0	0	1	3	4.8	0.5	0.0	0.0	0.3	0.8
40-44	4	1	0	1	6	9.7	1.0	0.2	0.0	0.2	1.5
45-49	1	1	0	0	2	3.2	0.3	0.3	0.0	0.0	0.5
50-54	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0
55-59	2	3	1	0	6	9.7	0.7	1.0	0.3	0.0	2.0
60-64	1	2	0	2	5	8.1	0.4	0.7	0.0	0.7	1.8
65-69	1	0	0	1	2	3.2	0.4	0.0	0.0	0.4	0.8
70-74	3	0	1	0	4	6.5	1.5	0.0	0.5	0.0	2.0
75-79	3	2	1	0	6	9.7	1.9	1.3	0.6	0.0	3.9
80-84	2	1	1	1	5	8.1	2.1	1.0	1.0	1.0	5.2
85+	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0
Unknown	0	0	0	0	-	-	-	-	-	-	-
Total	28	11	11	12	62	100.0	0.5	0.2	0.2	0.2	1.2
% Total	45.2	17.7	17.7	19.4	100.0	100.0					

Note: Census 2022 data was used to calculate rates

Acknowledgements

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Departments of Public Health, National Virus Reference Laboratory (NVRL) and other Microbiology Laboratories

Further information available on HPSC website:

Case definition: <https://www.hpsc.ie/a-z/other/viralencephalitis/casedefinitions/>

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