SURVEILLANCE REPORT

Hepatitis A

Annual Epidemiological Report for 2021

Key facts

- In 2021, 30 EU/EEA countries reported 3 864 cases of hepatitis A.
- The EU/EEA notification rate was 0.9 cases per 100 000 population. Twenty-one EU/EEA countries had notification rates below one case per 100 000 population. The countries with the highest notification rates were Bulgaria (10.5), Liechtenstein (5.1) and Romania (4.5).
- In 2021, both the number of reported cases and the EU/EEA notification rate were at their lowest since the beginning of EU-level hepatitis A surveillance in 2007. This was most likely due to the impact of the COVID-19 pandemic on the reported number of cases, with notably reduced international travel in addition to non-pharmaceutical interventions such as restaurant closures, fewer gatherings and social interactions.
- Similar to previous years, children between 5–14 years of age accounted for a large proportion of cases (31%), and had the highest notification rate (2.8 cases per 100 000 population).
- In 2021, six multi-country clusters of hepatitis A were reported to EpiPulse. Three clusters involved the hepatitis A sub-genotype IA virus and were possibly linked to the consumption of fresh and/or frozen berries. The source of infection for the remaining clusters was not identified.

Introduction

Hepatitis A is an inflammation of the liver caused by the hepatitis A virus. In children, hepatitis A virus infection is often asymptomatic or mild. In adults, the onset of illness is usually abrupt, characterised by fever, malaise, and abdominal discomfort. Jaundice is the predominant symptom. Very severe disease is unusual, but the infection can lead to acute liver failure and death, particularly in the elderly and patients with liver disease. Symptoms may last from one or two weeks to months.

The hepatitis A virus is highly transmissible and has an average incubation period of four weeks, ranging from two to six weeks. Transmission most often occurs via the faecal–oral route through contaminated food and water or via person-to-person contact (e.g. among household contacts, sexual contacts, day-care centres or schools).

Methods

This report is based on data for 2021 retrieved from The European Surveillance System (TESSy) on 9 October 2022. TESSy is a system for the collection, analysis and dissemination of data on communicable diseases.

For a detailed description of the methods used to produce this report, please refer to the 'Methods' chapter in the 'Introduction to the Annual Epidemiological Report' [1].

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An overview of the national surveillance systems is available online [2].

A subset of the data used for this report is available through ECDC's online *Surveillance Atlas of Infectious Diseases* [3].

For 2021, 30 EU/EEA countries (27 EU Member States plus Iceland, Liechtenstein and Norway) reported hepatitis A data to ECDC. Twenty-six countries used EU case definitions: 12 countries used the EU 2018 case definition; six countries used the EU 2012 case definition, and seven countries used the EU 2008 case definition. The remaining five reporting countries used unspecified or other case definitions. The only difference between the 2018 definition and the 2012 and 2008 definitions is that the former considers laboratory confirmation as sufficient for a case when information on clinical symptoms is missing.

Reporting of hepatitis A was compulsory in all the 30 reporting countries. Twenty-nine countries had a comprehensive hepatitis A surveillance system, and one country (Belgium) did not specify the type of surveillance they undertook. In 29 countries, surveillance was based on either laboratories or physicians reporting cases or a combination of the two. Romania reported only hospitalised cases. Twenty-seven countries reported case-based data and two countries (Belgium and Bulgaria) reported aggregated data [2]. Spain did not receive data from all the regions that normally report cases, and the case numbers are therefore lower than expected.

For 2020–2021, no data were reported by the United Kingdom (UK) due to its withdrawal from the EU on 31 January 2020.

In addition to reporting via TESSy, information from event-based surveillance for hepatitis A clusters or outbreaks with potential implications for the EU/EEA was collected through the European surveillance portal for infectious diseases, EpiPulse.

Epidemiology

In 2021, 30 EU/EEA countries reported 3 864 cases of hepatitis A (Table 1). The EU/EEA notification rate was 0.9 cases per 100 000 population. In 2021, both the lowest number of reported cases and the lowest notification rate were reported since the beginning of EU-level hepatitis A surveillance in 2007. The total number of hepatitis A cases reported in EU/EEA countries in 2021 represented a decrease of 65.7% and 12.3% compared to 2019 and 2020, respectively.

In 2021, almost half (n=14, 47%) of the countries reported a decrease in the reported number of cases compared to 2020, while a notable reduction in case numbers was reported in Bulgaria (-44%), Denmark (-58%), and Estonia (-77%). In contrast, a notable increase in the number of cases was reported by Hungary (+168%), Ireland (+115%), the Netherlands (+79%) and Sweden (+70%).

In 2021, most countries (n=22; 73%) reported fewer than 100 cases. Three countries reported more than 500 cases; Romania reported the highest number of cases overall (n=873; 22.6%) followed by Bulgaria (n=723; 18.7%) and Germany (n=582; 15.0%). The highest notification rate was reported by Bulgaria at 10.5 cases per 100 000 population, followed by Liechtenstein (5.1 cases per 100 000 population) and Romania (4.5 cases per 100 000 population).

In the 25 countries reporting information on travel history for all or part of their cases, 287 of 2 465 cases (11.6%) with available information were travel-associated. France (n=93), Germany (n=68) and Sweden (n=42) accounted for two-thirds (71%) of all travel-associated cases.

Table 1. Distribution of confirmed hepatitis A cases and rates per 100 000 population by country and year, EU/EEA, 2017–2021

Country	2017		2018		2019		2020		2021		
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	ASR
Austria	242	2.8	80	0.9	76	0.9	35	0.4	32	0.4	0.4
Belgium	368	3.2	241	2.1	219	1.9	124	1.1	121	1.0	1.0
Bulgaria	2 510	35.3	1 347	19.1	1 512	21.6	1 297	18.7	723	10.5	11.5
Croatia	46	1.1	96	2.3	9	0.2	5	0.1	5	0.1	0.1
Cyprus	6	0.7	9	1.0	0	0.0	1	0.1	4	0.4	0.5
Czechia	772	7.3	209	2.0	240	2.3	183	1.7	210	2.0	2.1
Denmark	38	0.7	65	1.1	34	0.6	53	0.9	22	0.4	0.4
Estonia	45	3.4	15	1.1	20	1.5	30	2.3	7	0.5	0.6

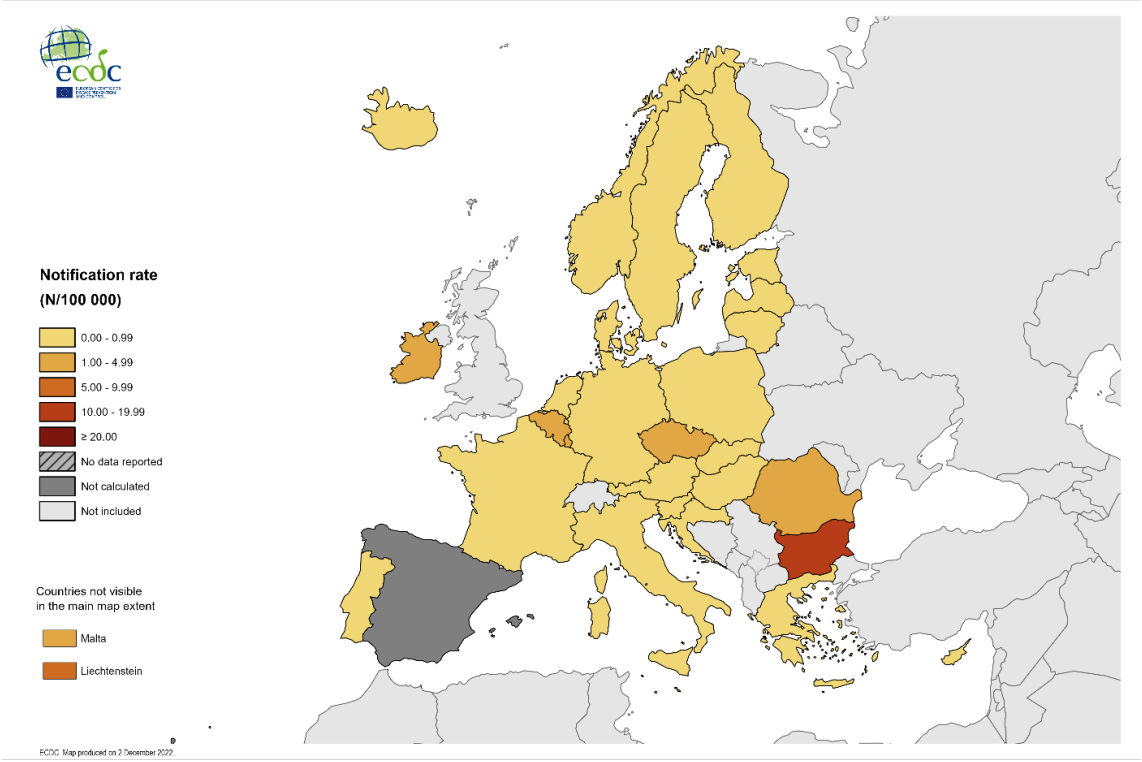
Country	2017		2018		2019		2020		2021		
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	ASR
Finland	26	0.5	27	0.5	18	0.3	12	0.2	15	0.3	0.3
France	3 387	5.1	1 525	2.3	1 375	2.0	411	0.6	423	0.6	0.6
Germany	1 227	1.5	1 038	1.3	871	1.0	558	0.7	582	0.7	0.7
Greece	276	2.6	104	1.0	28	0.3	8	0.1	7	0.1	NR
Hungary	366	3.7	177	1.8	104	1.1	28	0.3	75	0.8	0.8
Iceland	5	1.5	1	0.3	2	0.6	1	0.3	2	0.5	0.5
Ireland	67	1.4	35	0.7	51	1.0	33	0.7	71	1.4	1.3
Italy	3 766	6.2	1 077	1.8	528	0.9	130	0.2	172	0.3	0.3
Latvia	75	3.8	67	3.5	37	1.9	21	1.1	15	0.8	0.8
Liechtenstein	ND	NR	ND	NR	ND	NR	ND	NR	2	5.1	5.9
Lithuania	38	1.3	13	0.5	8	0.3	9	0.3	5	0.2	0.2
Luxembourg	7	1.2	2	0.3	4	0.7	11	1.8	10	1.6	1.6
Malta	27	5.9	4	0.8	11	2.2	2	0.4	9	1.7	1.6
Netherlands	345	2.0	180	1.0	146	0.8	38	0.2	68	0.4	0.4
Norway	49	0.9	32	0.6	37	0.7	14	0.3	33	0.6	0.6
Poland	2 990	7.9	1 440	3.8	1 054	2.8	110	0.3	92	0.2	0.2
Portugal	559	5.4	82	0.8	42	0.4	20	0.2	13	0.1	0.1
Romania	2 477	12.6	4 527	23.2	3 351	17.3	1 010	5.2	873	4.5	4.8
Slovakia	673	12.4	173	3.2	99	1.8	11	0.2	12	0.2	0.2
Slovenia	35	1.7	16	0.8	12	0.6	4	0.2	11	0.5	0.5
Spain	4 528	9.7	2 294	4.9	974	2.1	189	NR	153	NR	NR
Sweden	110	1.1	123	1.2	90	0.9	57	0.6	97	0.9	0.9
United Kingdom	1 085	1.6	681	1.0	418	0.6	ND	NR	ND	NR	NR
EU/EEA	**26 145**	**5.1**	**15 680**	**3.0**	**11 370**	**2.2**	**4 405**	**1.0**	**3 864**	**0.9**	**0.9**

Source: country reports
ASR: age-standardised rate
ND: no data reported
NR: no rate calculated

For 2020 and 2021, Spain did not receive data from all regions and rates are therefore not displayed for these years.

Most EU/EEA countries (21 out of 30; 70%) had a notification rate less than one case per 100 000 population (Figure 1). Age-standardised rates did not differ substantially from crude rates (Table 1).

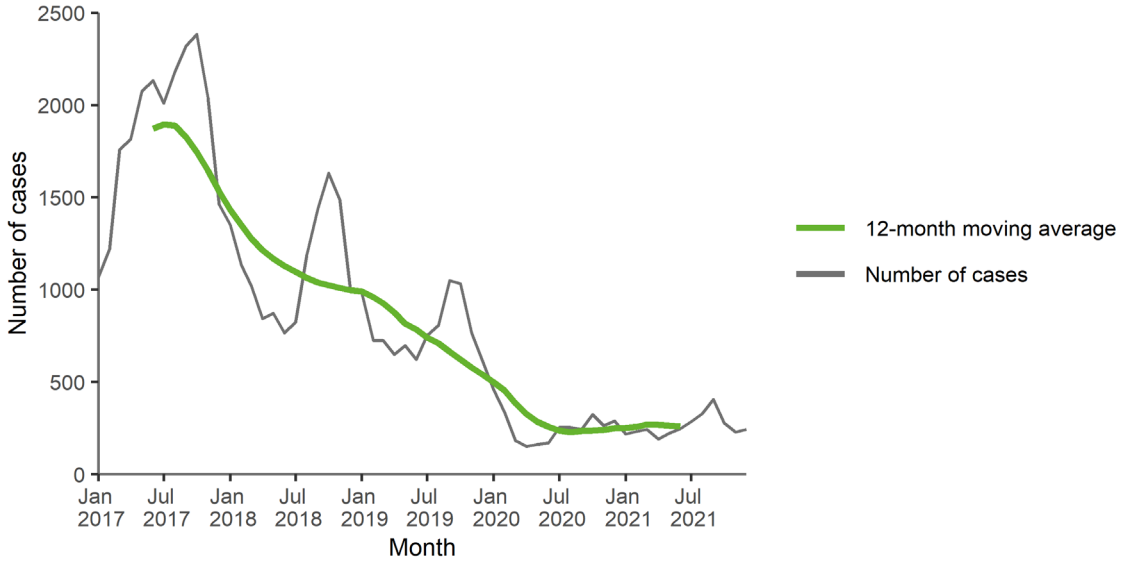
Figure 1. Distribution of confirmed hepatitis A cases per 100 000 population by country, EU/EEA, 2021



Source: Country reports from Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden.

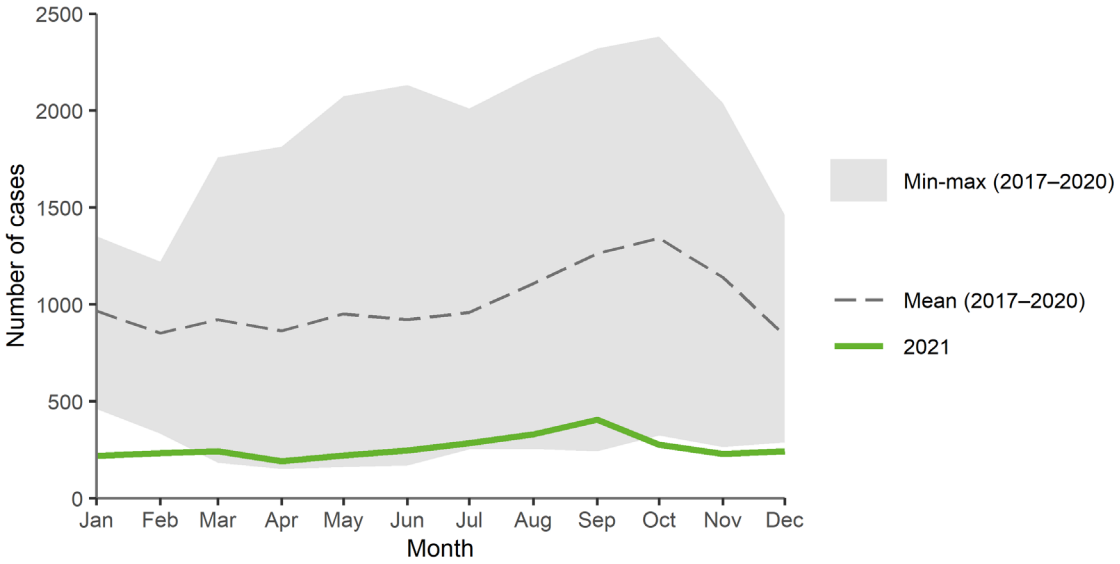
In 2021, the overall male-to-female ratio was 1.1:1. Similar to previous years, children between the ages of 5–14 years accounted for a large proportion of cases (31%) and the highest notification rate (2.8 cases per 100 000 population) (Figure 4). Male cases had slightly higher notification rates than female cases in the age groups up to 44 years. There was no difference in the notification rate between males and females in the 45–64-years age group, while the notification rate among females was slightly higher than males in the 65+ age group. Almost one-third of all cases (29%) were aged 45 years and above.

Figure 2. Distribution of confirmed hepatitis A cases by month, EU/EEA, 2017–2021



Source: Country reports from Austria, Belgium, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden.

Figure 3. Distribution of confirmed hepatitis A cases by month, EU/EEA, 2017–2020 and 2021

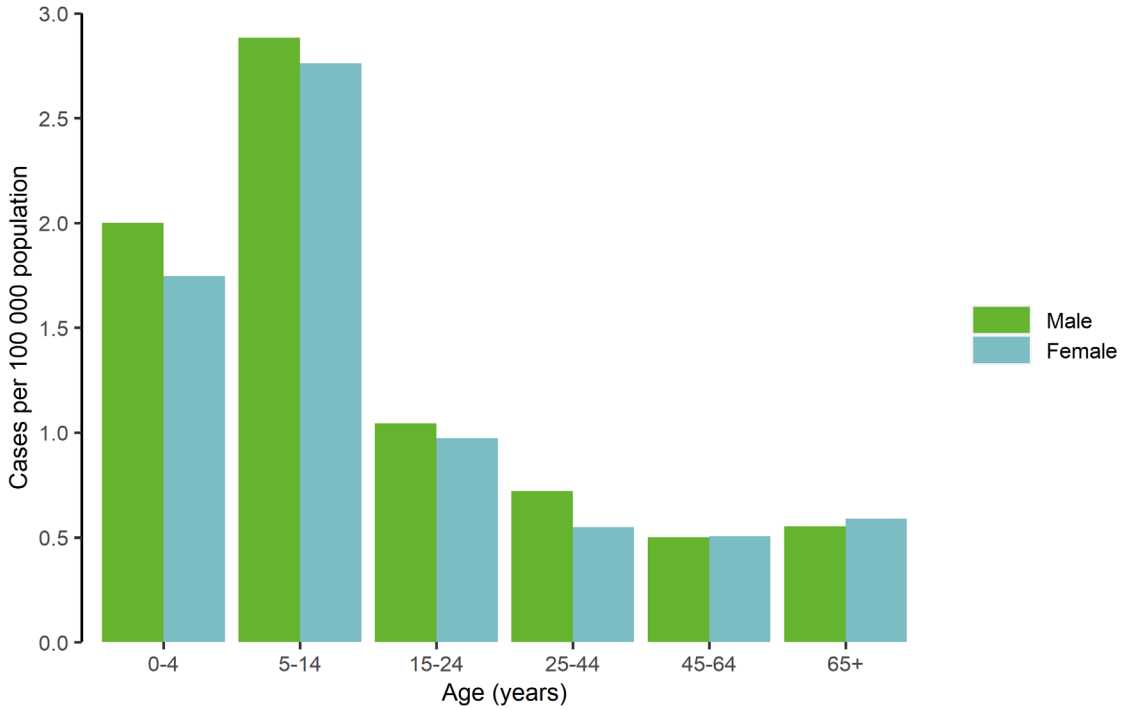


Source: Country reports from Austria, Belgium, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden.

Between 2017 and 2021, the 12-month moving average of the reported number of cases showed a decreasing trend since a peak in case numbers in 2017 (Figure 2). This peak corresponds to an unprecedentedly large and prolonged outbreak of hepatitis A sub-genotype IA in several EU/EEA countries during 2017 and 2018, which disproportionally affected men who have sex with men (MSM). In 2019, the reported number of cases was similar to the number before the 2017–2018 outbreak; in 2019, the number of cases reported (n=11 370) was similar to the average number of cases reported in the five years from 2012 to 2016 (n=13 480). In 2020 and 2021, a notable decrease in the number of cases was observed; this can be attributed primarily to the COVID-19 pandemic and restrictions, including reduced international travel. Other factors contributing to this decreasing trend were, the possibly increased natural immunity in at-risk groups following the large multi-country outbreak of hepatitis A genotype IB occurring in 2017 and 2018, in addition to heightened awareness of hepatitis A transmission and preventive measures such as practising good hygiene, and increased vaccine uptake among at-risk groups. Indeed, the lowest number of cases ever reported since 2007 (which is when the EU-level surveillance began) was in 2021.

Hepatitis A typically has a marked seasonality in EU/EEA countries, with cases peaking between September and November (Figure 3). In, 2021, a slight increase in case numbers was evident in September. However, the monthly number of cases reported throughout 2021 were consistently considerably lower for each month when compared to 2017–2020 (Figure 3).

Figure 4. Distribution of confirmed hepatitis A cases per 100 000 population, by age and gender, EU/EEA, 2021



Source: Country reports from Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden.

Microbial surveillance

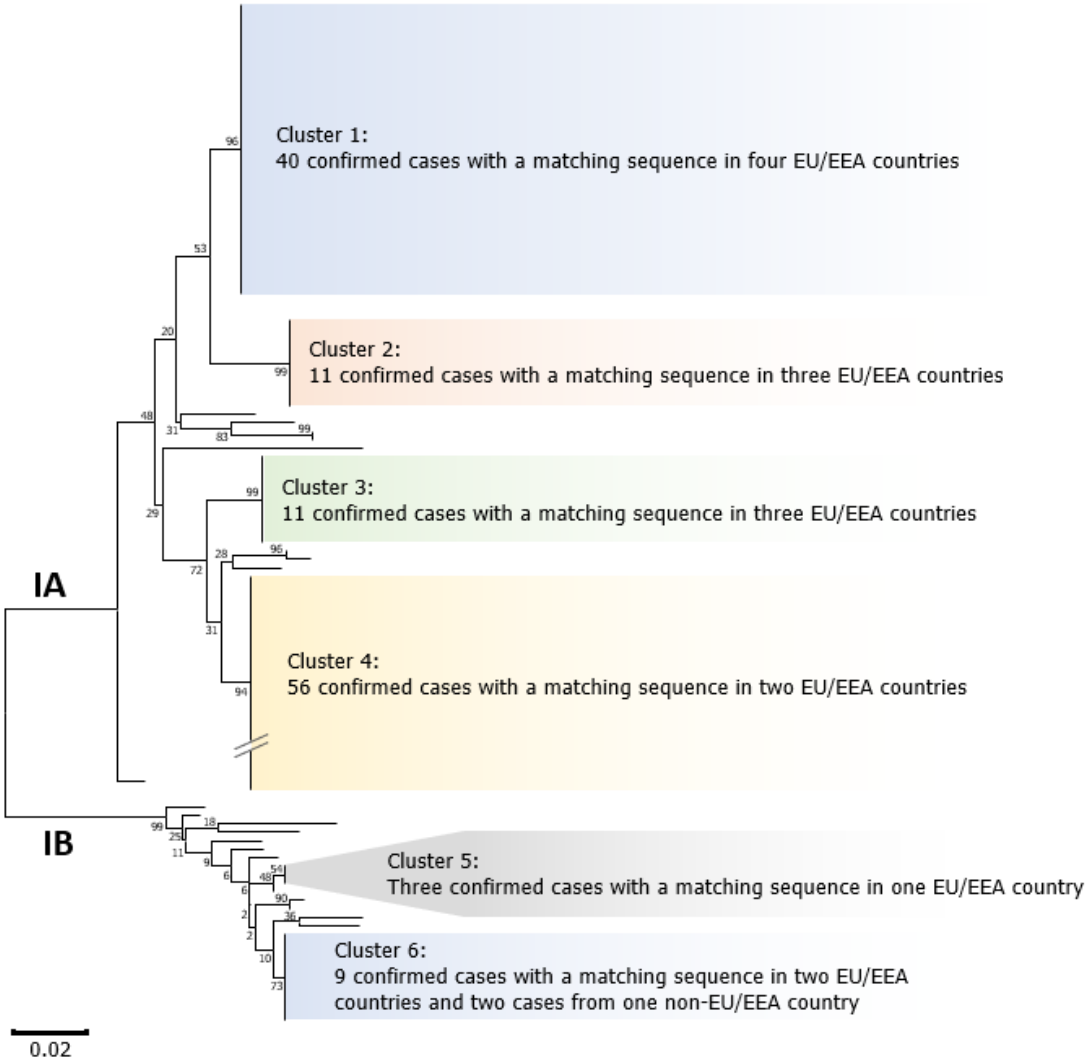
In 2021, information on sub-genotype was reported by four countries (Iceland, Ireland, Norway and Sweden) for 96 cases (2.5%) in the EU/EEA – 46 cases were of sub-genotype IA, 43 cases were of sub-genotype IB, and 7 cases were of sub-genotype IIIA.

Outbreaks and other threats

On 22 June 2021, EpiPulse, a new ECDC-run portal integrating several former ECDC applications, including the platform, Epidemic Intelligence Information System (EPIS), was launched. The portal facilitates collection, analysis and dissemination of indicator- and event-based surveillance data on infectious diseases and associated health issues.

During 2021, five multi-country clusters and one national cluster of hepatitis A virus infection were reported through EpiPulse for Food and Waterborne diseases. Phylogenetic analysis of the sequences and information submitted in EpiPulse (Figure 5) shows three multi-country clusters involving hepatitis A sub-genotype IA virus possibly linked to the consumption of fresh and/or frozen berries. One multi-country cluster involving hepatitis A sub-genotype IA virus, and two multi-country clusters involving hepatitis A sub-genotype IB virus were also reported. However, the source of infection was not identified. One national cluster involving hepatitis A sub-genotype IB was also reported; the source of infection was not identified.

Figure 5. Phylogenetic analysis of Hepatitis A sub-genotype IA- and IB clusters reported in EpiPulse during 2021



The phylogenetic tree was constructed using information reported by countries in EpiPulse during 2021 on sequences matching the VP1/2A outbreak sequences with the Neighbour-joining method in MEGA7, using the Tamura Nei as evolutionary model, and a bootstrapping approach for the statistical analysis (1 000 replicates). The scale bar indicates the number of nucleotide substitutions per site.

Discussion

In 2021, hepatitis A was the fifth most commonly reported food-borne infectious disease in the EU/EEA [3]. Despite this, the number of reported hepatitis A cases in 2021 was at its lowest since the beginning of EU-level surveillance in 2007.

Notably, in 2020 and 2021, the COVID-19 pandemic impacted the hepatitis A surveillance data. Factors mentioned by countries resulting in lower case numbers were: less travel due to travel restrictions, fewer social interactions, people avoiding to seek medical care for mild symptoms due to risk of exposure to COVID-19 in healthcare facilities, limited laboratory capacity due to reallocation of resources to SARS-CoV-2, fewer restaurant visits, etc. Indeed, the overall trend of the reported number of hepatitis A cases in the EU/EEA has been decreasing since 2017. In addition to the impact of the COVID-19 pandemic on the number of cases reported in 2020 and 2021, the increased prevalence of natural immunity in the at-risk population following the large multi-country outbreak of hepatitis A genotype IB in 2017 and 2018 [4, 5], and heightened awareness of hepatitis A-preventive measures (e.g. practising good hygiene and increased vaccine uptake) among at-risk groups, are also likely to have contributed to the observed decreasing trend. Moreover, data for the UK has not been reported since 2019, and case numbers are not complete for Spain in 2020 and 2021 because data was not received from all regions.

Among cases with known information, a similar proportion of cases were reported as travel-associated in 2021 (11.6%, 287 out of 2 465) compared to 2020 (8.5%, 209 out of 2 448), which was lower than 2019 (14.6%, 1 256 out of 8 603). Decreased international travel and restrictions on travel during the COVID-19 pandemic is the most plausible explanation for this.

Almost half of the countries reported fewer cases in 2021 compared to 2020. However, a small number of countries reported an increase in case numbers, including Hungary, Ireland, the Netherlands, and Sweden. In Ireland, an outbreak of hepatitis A sub-genotype IA among the Irish Traveller community was reported in 2020 and 2021 [6]. The outbreak investigation identified 61 total cases, primarily among children, from September 2020 to November 2021. The outbreak investigation indicated that transmission was likely facilitated by household contact between families sharing communal residential housing, perpetuated by inadequate access to sanitation facilities and propagated by social mixing across family networks [6]. A tailored communication campaign (pictorial information leaflet was produced and disseminated) was employed in addition to a vaccination strategy to help bring the outbreak under control [6]. The reasons for the observed increase in the reported number of cases in Hungary, the Netherlands and Sweden are not clear, but may reflect national outbreaks, or a return to a similar number of cases as reported before the pandemic.

Approximately one-third of cases in 2021 were reported among children in the 5–14-year age group, which is consistent with previous years. Compared to adults, children are more likely to develop mild or very mild disease. As a result, it can be difficult to capture the true number of cases in this population group, possibly leading to an underestimation of the true number of cases [7]. In 2021, adults older than 44 years of age accounted for almost one-third of cases in the EU/EEA. Older adults are at increased risk of severe disease, hospitalisations and, albeit rarely, death [8].

Similar to previous years, in 2021, national authorities reported the investigation of clusters of cases suspected to be associated with food-borne transmission to EpiPulse. Among six reported multi-country clusters of hepatitis A, three clusters involved hepatitis A sub-genotype IA virus and were possibly linked to the consumption of fresh and/or frozen berries, highlighting that contamination of food is often associated with hepatitis A transmission in Europe [9]. One multi-country cluster involving hepatitis A sub-genotype IA virus and two multi-country clusters involving hepatitis A sub-genotype IB virus were also reported. However, the sources of infection were not identified.

In 2021, a small number of cases included information on sub-genotype; 48% (n=46) were of sub-genotype IA, 45% were of sub-genotype IB, and 7% (n=7) were of sub-genotype IIIA. Molecular characterisation and sharing of sequences at the international level offers the opportunity to rapidly link seemingly sporadic cases and detect diffuse cross-border outbreaks. It is recommended that molecular characterisation of hepatitis A viruses and sharing of sequences at the European level should be prioritised.

Public health implications

The World Health Organization (WHO) sets out the following vaccination recommendations to reduce the incidence of hepatitis A. In countries at very low and low hepatitis A virus endemicity, like most EU/EEA countries, WHO recommends vaccinating men who have sex with men (MSM), travellers to endemic areas and people who inject drugs (PWID) [7, 10]. The same groups should be targeted by communication campaigns to increase awareness of the infection and on the mode(s) of transmission. In very low and low hepatitis A virus endemicity settings, WHO also recommends vaccinating individuals at risk of a severe outcome (i.e. immunocompromised individuals and the elderly). In countries of intermediate endemicity, WHO recommends universal childhood vaccination [10].

In all settings, measures aiming to improve hygiene and sanitation, and rapid implementation of outbreak response are essential to reduce hepatitis A virus transmission, including the timely tracing of contacts of cases to reduce the likelihood of secondary and tertiary transmission. Further, collaboration between the public health and food safety sectors is important to help reduce food-borne infections.

References

1. European Centre for Disease Prevention and Control (ECDC). Introduction to the Annual Epidemiological Report. Stockholm: ECDC; 2020. Available at: http://ecdc.europa.eu/annual-epidemiological-reports/methods

2. European Centre for Disease Prevention and Control (ECDC). Surveillance systems overview for 2021. Stockholm: ECDC; 2022. Available at: https://www.ecdc.europa.eu/en/publications-data/surveillance-systems-overview-2021

3. European Centre for Disease Prevention and Control (ECDC). Surveillance Atlas of Infectious Diseases. Stockholm: ECDC; 2021.
Available at: https://atlas.ecdc.europa.eu/public/index.aspx?Dataset=27&HealthTopic=25

4. European Centre for Disease Prevention and Control (ECDC). Annual Epidemiological Report 2018 – Hepatitis A. Stockholm: ECDC; 2022. Available at: https://www.ecdc.europa.eu/en/publications-data/monitoring/all-annual-epidemiological-reports

5. European Centre for Disease Prevention and Control (ECDC). Annual Epidemiological Report 2019 – Hepatitis A. Stockholm: ECDC; 2022. Available at: https://www.ecdc.europa.eu/en/publications-data/monitoring/all-annual-epidemiological-reports

6. Kelly D, O'Hare C, McKeown P, Cianci F, Doyle S. Detection and control of an ongoing international outbreak of hepatitis A among the Irish Traveller community beginning September 2020. Epidemiology & Infection. 16 February 2022; 150, E57. Available at: https://www.cambridge.org/core/journals/epidemiology-and-infection/article/detection-and-control-of-an-ongoing-international-outbreak-of-hepatitis-a-among-the-irish-traveller-community-beginning-september-2020/13FCDD938860287A155E6B4D46246C44

7. World Health Organization (WHO). WHO immunological basis for immunization series: module 18: hepatitis A. Update 2019. Geneva: WHO; 2019. Available at: https://apps.who.int/iris/handle/10665/326501

8. Severi E, Georgalis L, Pijnacker R, Veneti L, Turiac IA, Chiesa F, et al. Severity of the clinical presentation of hepatitis A in five European countries from 1995 to 2014. International Journal of Infectious Diseases. 2022 May; 118, pp.34-43. Available at: https://pubmed.ncbi.nlm.nih.gov/35134558/

9. Severi E, Verhoef L, Thornton L, Guzman-Herrador BR, Faber M, Sundqvist L, et al. Large and prolonged food-borne multistate hepatitis A outbreak in Europe associated with consumption of frozen berries, 2013 to 2014. Euro Surveill. 2015 Jul 23;20(29):21192.
Available at: https://www.eurosurveillance.org/content/10.2807/1560-7917.ES2015.20.29.21192

10. World Health Organization (WHO). WHO position paper on hepatitis A vaccines. Weekly Epidemiological Record, 87(28-29), pp.261-276. Geneva: WHO; 6 June 2012.
Available at: https://www.who.int/publications/i/item/who-wer8728-29-261-276