

SURVEILLANCE REPORT

Hepatitis B

Annual Epidemiological Report for 2023

Key facts

- For 2023, 30 countries in the European Union/European Economic Area (EU/EEA) reported 37 766 cases of hepatitis B virus (HBV) infection, corresponding to a crude rate of 8.1 cases per 100 000 population.
- Of all cases, 6.3% were reported as acute, 40.5% as chronic, 46.1% as 'unknown' and 7.1% as 'could not be classified'.
- The highest rates of both acute and chronic infections were observed among 25–54-year-olds (63.1%). The overall male-to-female ratio was 1.5:1.
- Among acute cases with complete information, transmission through heterosexual contact was most reported (18.0%), followed by nosocomial transmission (16.0%) and transmission among men who have sex with men (14.7%). Among chronic cases, mother-to-child transmission was the most reported route of transmission (39.4%). Migrants from highly endemic countries are disproportionately affected by chronic infections.
- From 2014 to 2021, the rate of acute cases declined from 0.7 to 0.3 per 100 000, thereafter increasing by 97.1% to 0.6 between 2021 and 2023.
- From 2014 to 2016, the rate of chronic cases increased from 5.6 to 6.3 per 100 000 population. Between 2017 and 2021, it decreased from 5.2 to 3.0 per 100 000 population, followed by a 40% increase to 4.2 per 100 000 population in 2023.
- There is a need to improve the surveillance data quality to better monitor the epidemiological situation.

Introduction

Hepatitis B is a liver infection caused by the hepatitis B virus (HBV) [1]. The virus enters the body through infected blood or other bodily fluids. The transmission can occur via unprotected sex with an infected person, contaminated needles or medical equipment, contaminated blood transfusions or vertically from mother-to-child during pregnancy or delivery [1,2].

HBV commonly causes an acute short-term and asymptomatic infection, but some individuals can develop chronic hepatitis B (CHB). Less than 5% of infected adults will develop CHB and up to 95% of children infected before five years old will develop CHB [1,2]. CHB can lead to severe liver damage including cirrhosis and liver cancer.

Hepatitis B is a major public health threat worldwide [3]. In 2024, the global prevalence was estimated at 254 million people living with HBV infection, with an estimated incidence of 1.2 million new cases per year [3]. In 2024, 1.1 million deaths were attributable to hepatitis B globally [3]. In the European Union/European Economic Area (EU/EEA), the disease burden remains high, with an estimated 3.2 million people living with CHB [4].

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Methods

This report is based on data for 2023 retrieved from The European Surveillance System (TESSy) on 5 February 2025.

For a detailed description of the methods used to produce this report, refer to the Methods chapter of the 'Introduction to the ECDC Annual Epidemiological Report' [5]. An overview of the national surveillance systems is available online [6]. A subset of the data used for this report is available through ECDC's online 'Surveillance Atlas of Infectious Diseases' [7].

EU/EEA countries reported data on newly diagnosed cases of hepatitis B to ECDC according to the EU 2018 case definition and differentiated acute and chronic cases using defined criteria (Table 1) [8]. When not possible to use the EU 2018 case definition, other case definitions were also accepted [8, 9].

Table 1. Case definitions for acute and chronic hepatitis B

Stage	Definition
Acute	Any of the below, with or without symptoms and signs (e.g. jaundice, elevated serum aminotransferase levels, fatigue, abdominal pain, loss of appetite, intermittent nausea, vomiting, fever): • Detection of IgM core antigen-specific antibody (anti-HBc IgM) - or • Detection of hepatitis B surface antigen (HBsAg) and previous negative HBV markers less than six months ago - or • Detection of hepatitis B nucleic acid (HBV-DNA) and previous negative HBV markers less than six months ago
Chronic	• Detection of HBsAg or HBeAg or HBV-DNA - and • No detection of anti-HBc IgM (negative result) - or • Detection of HBsAg or HBeAg or HBV-DNA on two occasions that are six months apart^a
Unknown	• Any newly diagnosed case that cannot be classified in accordance with the above definition of acute or chronic infection

^a In the event that the case was not notified the first time.

Surveillance systems across EU/EEA countries are heterogeneous [6]. Twenty-two countries submitted national data based on the 2012 or 2018 EU case definitions [8,9]. Four countries (Austria, Cyprus, Czechia, and Spain) used the 2008 EU case definition, and four countries (Denmark, Germany, Italy, and Liechtenstein) used national case definitions. All reported cases were included in the analysis regardless of the case definition used. Three countries (France, Hungary, and Spain) only submitted data on acute cases. Two countries (Belgium and Bulgaria) submitted aggregate data only and did not differentiate between stages of infection. No data have been reported by the United Kingdom (UK) since 2019 due to its withdrawal from the EU on 31 January 2020. The UK data that were reported up to 2019 are presented in Table 1 but are not included in the analysis.

Annual notification rates were calculated per 100 000 population for countries with comprehensive surveillance systems using Eurostat population data [10].

Epidemiology

Overall trends

For 2023, 30 EU/EEA Member States reported 37 766 cases of hepatitis B virus (HBV) infection, corresponding to a crude rate of 8.1 cases per 100 000 population. Of all cases, 2 392 (6.3%) were reported as acute, 15 295 (40.5%) as chronic, 17 390 (46.1%) as 'unknown', and 2 689 cases (7.1%) could not be classified because of aggregated data combining acute and chronic cases.

Twenty-six countries were able to provide data on acute cases (Table 2, Figure 1). The overall rate of acute cases was 0.6 per 100 000 population, ranging from 0.0 in Croatia and Iceland to 3.2 cases per 100 000 population in Finland. When restricting the analysis to the 23 countries that reported consistently from 2014 to 2023, the notification rate for acute hepatitis B was stable between 2014 and 2018 (0.7 - 0.5 per 100 000). Then a decrease was observed from 0.5 cases per 100 000 in 2018 to the lowest notification rate of 0.3 cases per 100 000 in 2021. Followed by an 97.1% increase in 2023 (0.6 per 100 000) (Figure 2).

Twenty-four countries submitted data on chronic infections. The overall notification rate was 5.1 cases per 100 000 population, ranging from 0.0 in Luxembourg and Poland to 23.2 in Iceland (Table 2). Among the 17 countries that

reported consistently between 2014 and 2023, the number of chronic cases increased from 5.6 per 100 000 in 2014 to the highest notification rate of 6.3 in 2016. Between 2017 and 2021, a decrease was observed from 5.2 to 3 per 100 000, followed by 40% increase to 4.2 per 100 000 in 2023 (Figure 2).

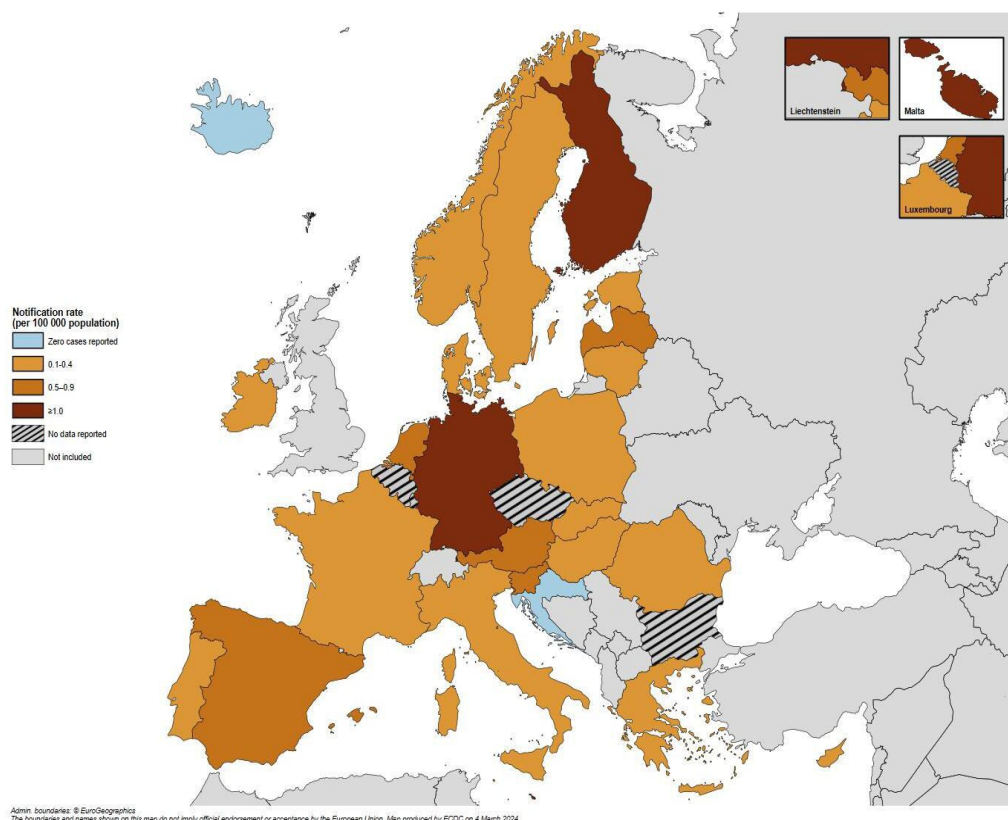
Table 2. Number of reported hepatitis B cases and rates per 100 000 population by country and year, 2019–2023

Country	2019		2020		2021		2022		2023							
	All ^a		All ^a		All ^a		All ^a		All ^a		Acute		Chronic		Unknown	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
Austria	1 079	12.2	941	10.6	1 002	11.2	880	9.8	992	10.9	52	0.6	369	4.1	571	6.3
Belgium ^b	2 021	NRC	1 423	NRC	1 029	NRC	1 670	NRC	2 073	NRC	NDR	NRC	NDR	NRC	NDR	NRC
Bulgaria	198	3.0	112	1.7	83	1.3	152	2.3	246	3.8	NDR	NRC	NDR	NRC	NDR	NRC
Croatia	93	2.3	22	0.6	23	0.6	23	0.6	45	1.2	0	0.0	6	0.2	39	1.0
Cyprus	108	12.3	30	3.4	18	2.0	43	4.8	52	5.6	1	0.1	51	5.5	NDR	NRC
Czechia	317	3.0	170	1.6	170	1.6	310	2.9	370	3.4	NDR	NRC	NDR	NRC	NDR	NRC
Denmark	170	2.9	152	2.6	124	2.1	102	1.7	106	1.8	9	0.2	97	1.6	0	0.0
Estonia	18	1.4	23	1.7	23	1.7	34	2.6	33	2.4	4	0.3	29	2.1	NDR	NRC
Finland	238	4.3	166	3.0	235	4.2	379	6.8	510	9.2	179	3.2	331	5.9	NDR	NRC
France	NDR	NRC	NDR	NRC	NDR	NRC	NDR	NRC	134	0.2	134	0.2	NDR	NRC	NDR	NRC
Germany	8 892	10.7	6 669	8.0	8 205	9.9	17 011	20.4	23 490	27.8	1 093	1.3	10 980	13.0	11 417	13.5
Greece	NDR	NRC	NDR	NRC	165	1.5	183	1.7	217	2.1	17	0.2	200	1.9	NDR	NRC
Hungary	NDR	NRC	NDR	NRC	NDR	NRC	NDR	NRC	17	0.2	17	0.2	NDR	NRC	NDR	NRC
Iceland	49	13.7	33	9.1	31	8.4	57	15.1	90	23.2	0	0.0	90	23.2	0	0.0
Ireland	513	10.5	335	6.7	430	8.6	501	9.9	591	11.2	14	0.3	572	10.9	5	0.1
Italy	341	0.6	172	0.3	144	0.2	92	0.2	286	0.5	142	0.2	32	0.1	112	0.2
Latvia	302	15.7	229	12.0	227	12.0	253	13.5	210	11.2	14	0.7	196	10.4	NDR	NRC
Liechtenstein	NDR	NRC	NDR	NRC	5	12.8	2	5.1	2	5.0	1	2.5	1	2.5	0	0.0
Lithuania	NDR	NRC	25	0.9	27	1.0	27	1.0	34	1.2	8	0.3	26	0.9	NDR	NRC
Luxembourg	52	8.5	518	82.7	283	44.6	296	45.9	364	55.1	NDR	NRC	0	0.0	364	55.1
Malta	23	4.7	39	7.6	45	8.7	54	10.4	83	15.3	12	2.2	46	8.5	25	4.6
Netherlands	1 169	6.8	801	4.6	816	4.7	918	5.2	936	5.3	91	0.5	823	4.6	22	0.1
Norway	393	7.4	225	4.2	257	4.8	367	6.8	442	8.1	9	0.2	433	7.9	NDR	NRC
Poland	2 854	7.5	992	2.6	1 546	4.2	2 500	6.8	3 142	8.5	36	0.1	0	0.0	3 106	8.5
Portugal	201	2.0	129	1.3	144	1.4	177	1.7	161	1.5	46	0.4	54	0.5	61	0.6
Romania	103	0.5	21	0.1	18	0.1	1 823	9.6	1 678	8.8	74	0.4	11	0.1	1 593	8.4
Slovakia	141	2.6	89	1.6	79	1.4	99	1.8	329	6.1	20	0.4	309	5.7	NDR	NRC
Slovenia	60	2.9	94	4.5	128	6.1	121	5.7	110	5.2	17	0.8	46	2.2	47	2.2
Spain	NDR	NRC	NDR	NRC	NDR	NRC	NDR	NRC	364	0.8	364	0.8	NDR	NRC	NDR	NRC
Sweden	1 098	10.7	804	7.8	744	7.2	826	7.9	659	6.3	38	0.4	593	5.6	28	0.3
Total EU/EEA (30 countries)	20 433	6.1	14 214	4.2	16 001	4.8	28 900	8.6	37 766	8.1	2 392	0.6	15 295	5.1	17 390	6.5
United Kingdom	9 254	13.9	NDR	NRC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
EU/EEA (31 countries)	29 687	7.5	14 214	4.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

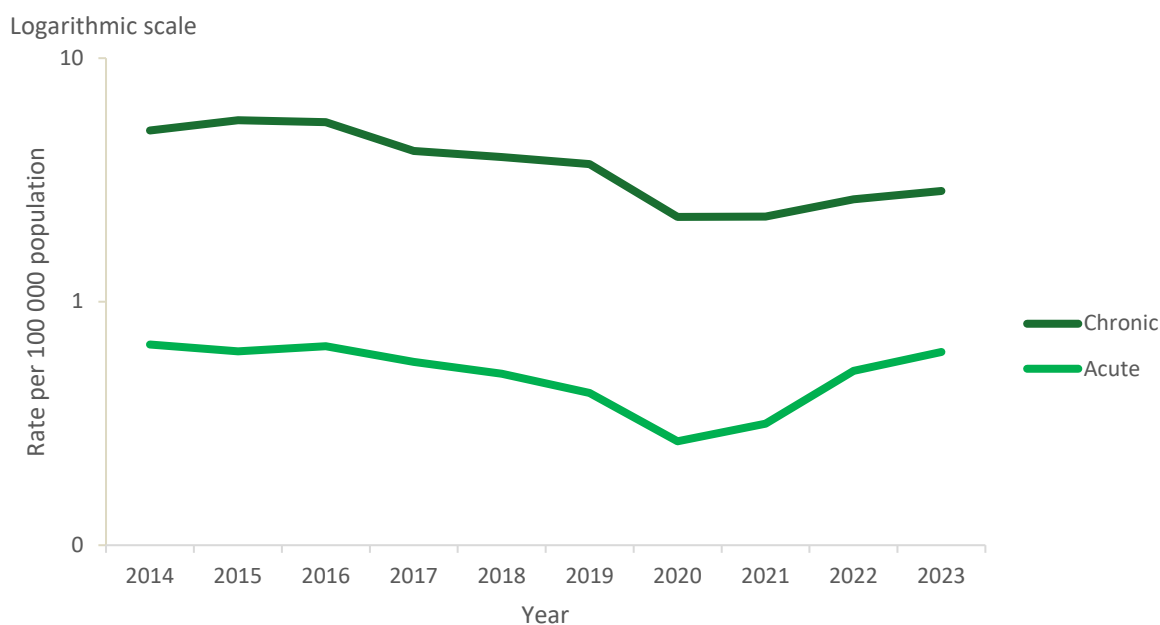
NA: not applicable; NDR: no data reported; NRC: no rate calculated.

a. Includes cases reported by countries as acute, chronic or unknown.

b. Data from Belgium came from a sentinel system with undefined coverage; therefore, population rates could not be calculated.

Figure 1. Notification rate of acute hepatitis B cases per 100 000 population by country, EU/EEA, 2023

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

Figure 2. Notification rates of acute and chronic hepatitis B per 100 000 population by year, EU/EEA countries reporting consistently, 2014–2023

Source for acute cases: country reports from Austria, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Latvia, Lithuania, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, and Sweden.

Source for chronic cases: country reports from Austria, Cyprus, Denmark, Estonia, Finland, Ireland, Latvia, Luxembourg, Malta, the Netherlands, Norway, Portugal, Romania, Slovakia, Slovenia, and Sweden.

Age and gender

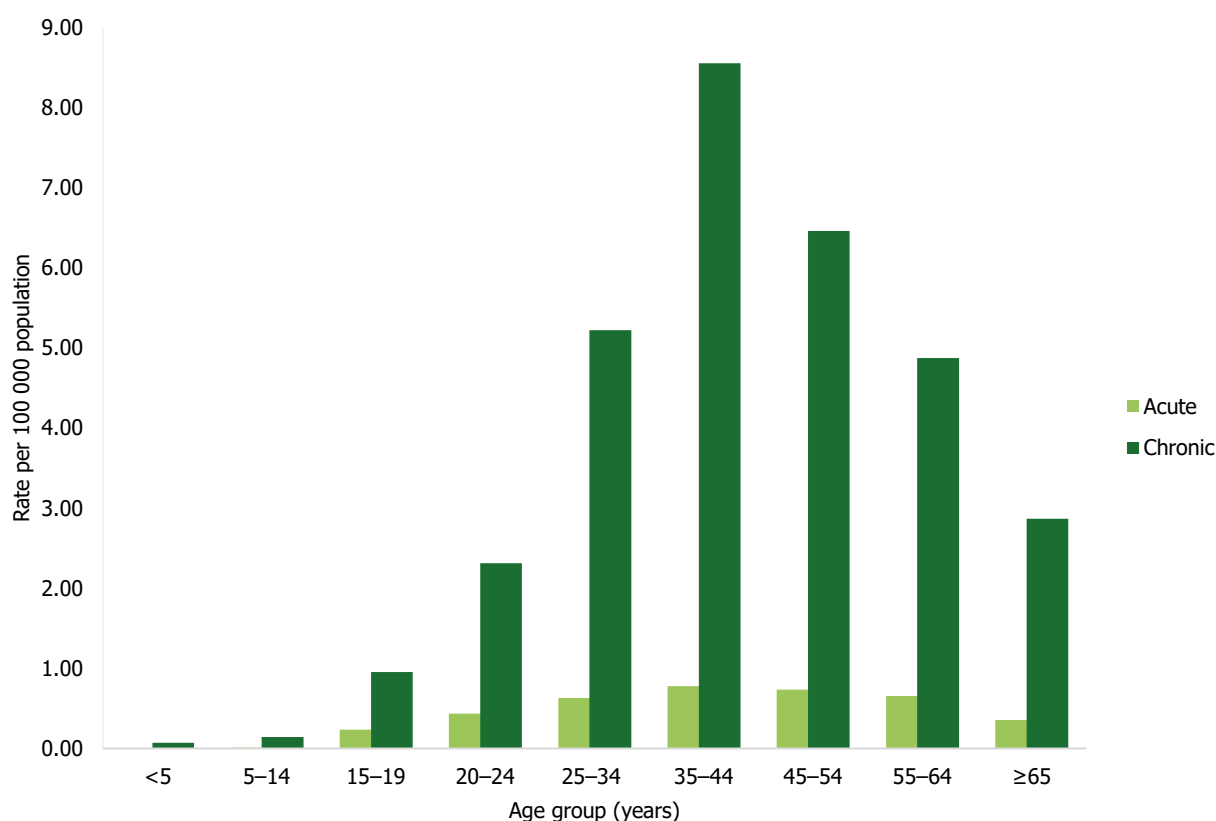
In 2023, 21 883 cases of hepatitis B were reported in men (13.6 cases per 100 000 population) and 15 733 cases were reported in women (9.4 cases per 100 000 population), excluding countries that only reported acute cases. This represents a male-to-female ratio of 1.5. The male-to-female ratio was higher among acute cases (2.2) than chronic cases (1.4).

Most cases were among 25–54-year-olds (63.1%). The age distribution among reported cases of acute and chronic infections were similar (Figure 3), with 7.8% of acute and 4.6% of chronic cases in people under 25 years of age.

Among countries reporting consistently every year since 2014, the proportion of acute cases below 25 years of age declined from 11.2% in 2014 to 7.8% in 2023. The proportion of chronic cases under 25 declined from 15.3% in 2014 to 4.6% in 2023.

Notification rates were higher among men in all age groups except in people aged below five years (Figure 4).

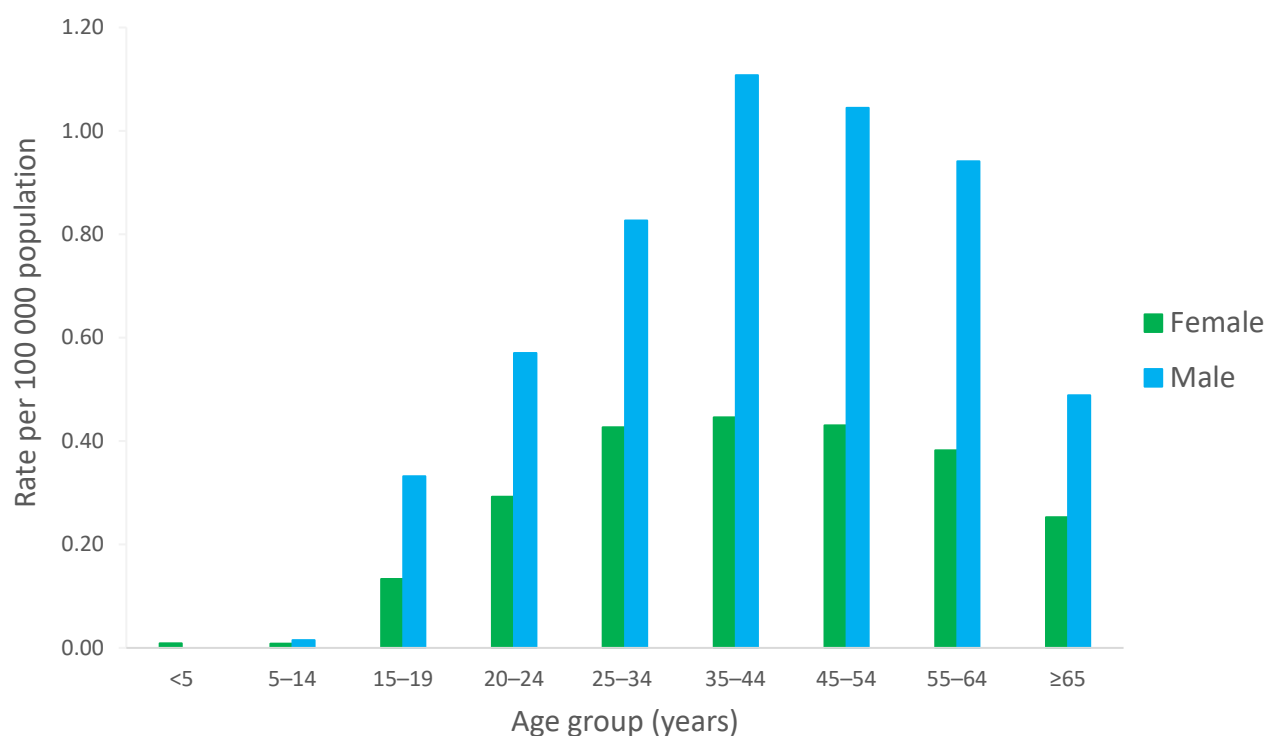
Figure 3. Notification rates of acute and chronic hepatitis B per 100 000 population by age group and disease status, EU/EEA, 2023



Source for acute cases: Country reports from Austria, Croatia, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Latvia, Lithuania, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, and Sweden.

Source for chronic cases: Country reports from Austria, Croatia, Cyprus, Denmark, Estonia, Finland, Germany, Greece, Iceland, Ireland, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, and Sweden.

Figure 4. Notification rate of acute hepatitis B cases per 100 000 population by age group and gender, EU/EEA, 2023

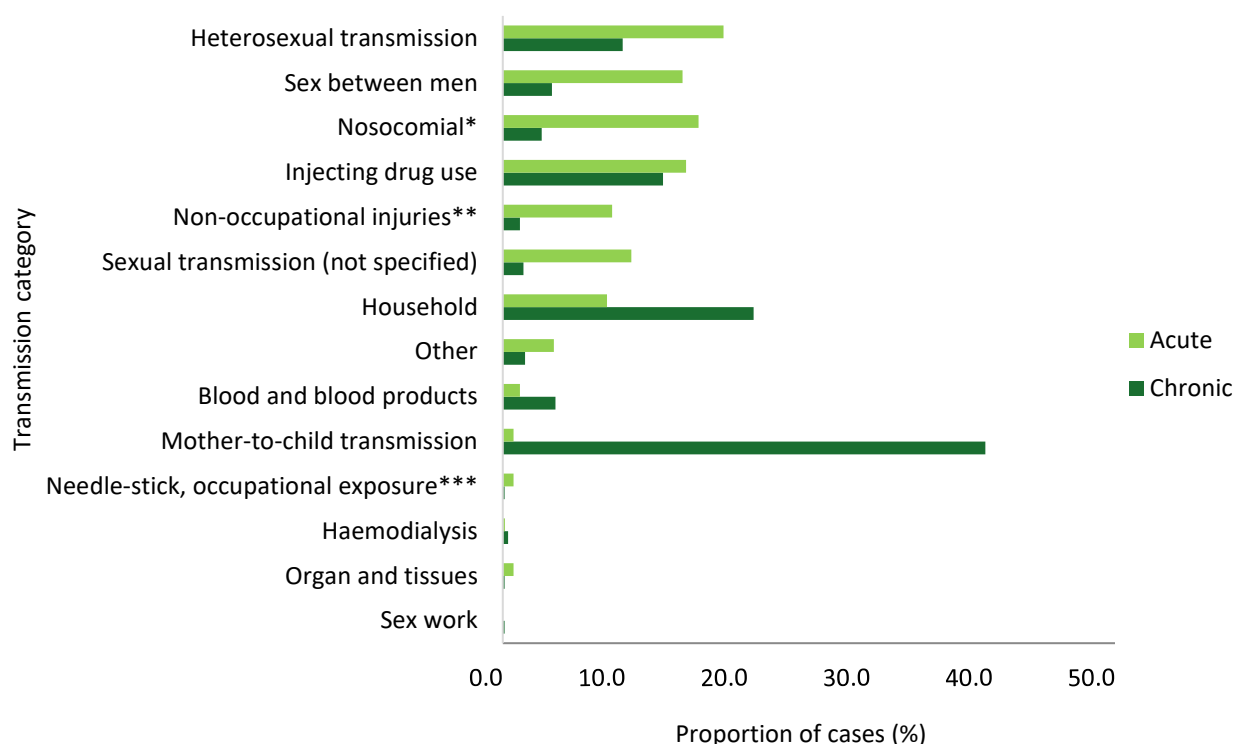


Source: Country reports from Austria, Croatia, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Latvia, Lithuania, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, and Sweden.

Transmission

Data on transmission were complete for 24% of the acute and 9% of the chronic hepatitis B cases reported in 2023. For the 567 acute cases with complete information, transmission through heterosexual contact was most commonly reported (18.0%), followed by nosocomial transmission (16.0%), transmission via injecting drug use (15.0%), and transmission among men who have sex with men (14.7%) (Figure 5). Italy accounted for 34% of the 86 acute cases attributed to nosocomial transmission.

For the 1 421 chronic cases with complete information, mother-to-child transmission was the most common route of transmission (39.4%). Among chronic cases attributed to mother-to-child transmission, 67.9% were reported by the Netherlands, 23.2% by Sweden, and 8.9% by Denmark. Of the chronic cases attributed to mother-to-child transmission, 91.3% were classified as being imported. Due to incompleteness and variation of reporting over time, trends are difficult to interpret and not reported.

Figure 5. Transmission category of hepatitis B cases by acute and chronic disease status, EU/EEA, 2023

Source for acute cases: Country reports from Austria, Croatia, Denmark, Estonia, Finland, France, Germany, Hungary, Iceland, Ireland, Italy, Latvia, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Spain and Sweden.

Source for chronic cases: Country reports from Austria, Croatia, Denmark, Estonia, Finland, Germany, Ireland, Latvia, Luxembourg, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia and Sweden.

* 'Nosocomial transmission' includes transmissions that occurred in hospitals, nursing homes, psychiatric institutions and dental services. This category refers mainly to patients exposed through healthcare settings, distinct from 'needle-stick and other occupational exposure', which refers to staff.

** 'Non-occupational injuries' includes bites and needle sticks that occur outside of a healthcare setting, tattoos and piercings.

*** 'Needle-stick, occupational exposure' refers to occupational injuries.

Importation status

Of 12 878 cases (34.1% of all reported cases) with information on importation status from 28 countries, 5 138 (39.8%) were reported as imported. Most imported cases (73.7%) were chronic infections.

Discussion

In 2023, the surveillance data show considerable numbers of newly diagnosed hepatitis B cases, with most of the reported cases chronic hepatitis B cases and cases with missing information on the stage of the infection. Information on the stage of infection is often missing due to the limited information on the previous hepatitis B tests, highlighting the difficulties encountered by countries to apply the current EU case definition to infections that remained undiagnosed for many years.

From 2013 to 2019, the decrease of acute cases, especially in populations under 25 years, reflected the increasing coverage of the hepatitis B vaccination [11, 12]. However, only 10 EU/EEA countries reached the WHO target of 95% coverage with three doses of HBV vaccine, although most other countries are within 5% of the target. The steeper decline observed in 2020 was likely due to the disruption in local services and behavioural changes associated with the COVID-19 pandemic [13–17]. After 2021, the end of COVID-19 restrictions the recovery of health systems various testing initiatives (general population screening, testing of different population groups at risk of infection, antenatal testing), changes in surveillance, an increase in migrant populations in some countries and possible increases in transmission might explain the increase in the notifications [18–24]. The efforts undertaken by some countries such as Romania and Germany to reduce the number of undiagnosed cases through testing/screening interventions may account for some of the increase in the notifications of chronic hepatitis B in 2023. As recent global estimates showed, a large proportion of the hepatitis B epidemic remain undiagnosed [3], all countries should be encouraged to implement and expand testing initiatives targeting most vulnerable areas and populations.

The geographical variations reflect differences in testing policies, reporting practices and underlying epidemiological differences across the EU/EEA [25]. Surveillance data including testing and positivity rates by populations and areas, and repeated prevalence estimates might give a better understanding of the disease burden and its dynamic.

Sexual transmission (heterosexual and men who have sex with men) is the most frequent route of transmission for acute hepatitis B cases reported in 2023. Migrant populations are disproportionately affected by HBV infection that is likely to have occurred before migrating from highly endemicity areas, and HBV infections among migrant populations are estimated through modelling to account for around a third of the chronic hepatitis B epidemic in the region [4, 26]. Indeed, the chronic hepatitis B epidemic seems to be driven by mother-to-child transmission among migrant populations. A large proportion of nosocomial transmission was observed among cases reported without any information on the duration of the infection. As nosocomial cases are commonly reported through event management systems instead of classic hepatitis surveillance, additional information will help to further analyse this situation [27].

Public health implications

Robust epidemiological information is essential to guide prevention and control interventions, evaluate strategies and monitor progress towards the global elimination targets. Considering the differences in testing and surveillance practices between countries, further analysis combining surveillance data and programmatic information – including prevalence estimates, testing, positivity rates and vaccine coverage – will help to better interpret the epidemiological situation across Europe by triangulation.

The increase in acute hepatitis notifications requires further investigation to determine if this is related to increased transmission, but highlights the importance of countries maintaining high vaccination coverage through a strengthening of existing vaccination programmes. There is a need for countries to improve the completeness of surveillance data, especially for transmission routes, country of birth and country of probable acquisition data. However, a reflection of the surveillance standards and revision of the surveillance objectives in the light of the monitoring needs, might help to guide the strategic and operational improvement of the surveillance approaches. In the medium term, a better integration of complementary methods such as prevalence surveys and sentinel surveillance and alternative data sources (e.g. electronic health records, reimbursement data) might help to better describe the situation. Automatised approaches could also help to improve epidemiological outputs timeliness and utility as an incentive to encourage further development of the surveillance.

In May 2017, the World Health Assembly adopted the first global health sector strategy on viral hepatitis that aims to eliminate the disease by 2030 [28]. The main elimination criteria require reducing the incidence of chronic infections by 90% and associated mortality by 65% by 2030 compared with 2015 levels. Significantly scaling-up key local interventions such as childhood vaccination programmes, evidence-based testing or screening initiatives in key populations and areas, systematic linkage to care, mother-to-child transmission prevention (antenatal screening, prophylaxis), harm reduction programmes targeting people who inject drugs, and infection prevention and control are crucial to accelerate progress towards the elimination goals. In this context, improving the vaccination uptake will not only contribute to better control hepatitis B transmission in EU/EEA countries, but it also substantially reduces vaccine preventable liver cancer [29].

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