Annual Epidemiological Report

Hepatitis B

Reporting on data retrieved from TESSy* on 19 November 2015

Suggested citation: European Centre for Disease Prevention and Control. Annual Epidemiological Report 2016 – Hepatitis B. [Internet]. Stockholm: ECDC; 2016 [cited YYYY Month DD]. Available from: http://ecdc.europa.eu/en/healthtopics/hepatitis-b/Pages/Annual-epidemiological-report-2016.aspx

Download entire page as PDF

Download PowerPoint presentation with all graphics

Key facts

- In 2014, 30 EU/EEA Member States reported 22 442 cases of hepatitis B virus (HBV) infection, a crude rate of 4.2 cases per 100 000 population.
- Of these cases, 11.9% were reported as acute, 64.0% as chronic, 22.4% as 'unknown', and 1.7% could not be classified.
- The most affected age group for both acute and chronic infections was the group of 25–34-year-olds accounting for 33.8% of cases; the overall male-to-female ratio was 1.5 to 1.
- There has been a steady decline in the reported rate of acute cases since 2006, which is most likely related to the impact of national vaccination programmes. Rates of chronic cases have risen over time, and this increase is probably due to changes in reporting methods as well as increases in local testing practices.
- Data on transmission were complete for only 10.4% of cases. Among acute cases with complete information, heterosexual transmission was most commonly reported (29.9%), followed by nosocomial transmission (17.9%), non-occupational transmission (12.0%), transmission among men who have sex with men (11.8%) and transmission through injecting drug use (9.3%). Mother-to-child transmission was the most commonly reported route (59.5%) for those categorised as chronic cases.
- The ongoing transmission of cases and diversity in the reported routes of transmission across Europe, highlights the need for countries to continue to improve the quality of surveillance data and to maintain prevention and control practices.

Methods

Click here for a detailed description of the methods used to produce this annual report

This report includes data on newly diagnosed cases of hepatitis B reported to ECDC by EU/EEA countries. Countries were requested to follow the EU 2012 case definition for reporting at the European level, but other case definitions were also accepted (Annex).

Acute and chronic hepatitis B infections were differentiated by countries using defined criteria (Table 1).

Table 1. Criteria for differentiating acute and chronic hepatitis B

Stage	Definition
Acute	Detection of IgM antigen-specific antibody (anti-HBc IgM) or Detection of hepatitis 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 Any of the above with or without symptoms and signs (e.g. jaundice, elevated serum aminotransferase levels, fatigue, abdominal pain, loss of appetite, intermittent nausea, vomiting, fever)
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*
Unknown	Any newly diagnosed case which cannot be classified in accordance with the above definition of acute or chronic infection

* In the event that the case was not notified the first time.

Surveillance systems across the EU/EEA countries are heterogeneous (Annex: table 2). Eighteen countries submitted national data in 2014 based on the 2012 EU case definition. Five countries used the 2008 EU case definition and seven countries (Belgium, Denmark, Germany, Italy, Luxembourg, Portugal and Romania) used national case definitions. The 2008 EU case definition only allows for the reporting of acute hepatitis B cases whereas the 2012 case definition includes both acute and chronic cases. All reported cases were included in the analysis, regardless of which case definition was used. The data collected according to the EU 2012 case definition represent confirmed cases; however, a few countries submitted 'probable' cases using alternative case definitions.

Annual notification rates were calculated per 100 000 population for countries with comprehensive surveillance systems using Eurostat population data (http://epp.eurostat.ec.europa.eu). For data reported from the UK, population data from the Office for National Statistics were used to exclude Scotland which did not report any hepatitis B data.

In nine countries – Cyprus, the Czech Republic, Denmark, Germany, Iceland, Italy, Malta, Portugal, Spain – historical data from the year 2006 were not included as they would not have been comparable with the subsequent enhanced data.

Hepatitis B data are presented by 'date of diagnosis' and, if not available, by 'date used for statistics'. When comparing data defined according to the two different dates across the database, there were only minor differences between them, and only in a few countries.

Italy reports data using two data sources. One of these sources has national coverage, but includes only a limited number of variables and was used for the calculation of national rates and for the breakdown by age and gender. The other data source in Italy is a sentinel system covering an estimated 76% of the population and includes epidemiological data on a range of variables. The sentinel population is considered representative of the wider population, and the data provided were scaled up from 76% to 100%. This source was used for epidemiological analyses including the route of transmission and importation status.

The data source for Belgium is a sentinel system with unknown coverage. National rates were therefore not calculated for Belgium.

Epidemiology: overall trends

In 2014, 30 EU/EEA Member States reported 22 442 cases of hepatitis B virus (HBV) infection (no data from Liechtenstein), a crude rate of 4.2 per 100 000 population. Of these cases, 2 667 (11.9%) were reported as acute, 14 371 (64.0%) as chronic, 5 020 (22.4%) as 'unknown', and 384 cases (1.7%) could not be classified due to an incompatible data format.

In 2014, 24 countries were able to provide data on acute cases (Table 2). The rate of acute cases ranged from 0 cases in Malta to 3.2 per 100 000 in Bulgaria (Figure 1). This includes countries that defined data by disease status or used a case definition that includes only acute cases (e.g. EU 2008).

Table 2. Number and rate of reported hepatitis B cases per 100 000 population, EU/EEA, 2010–2014†

Download Excel version

Country	2010		2011		2012		2013		2014							
	All		All		All		All		All		Acute*		Chronic*		Unknown*	
	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Austria	733	8.8	756	9	832	9.9	670	7.9	1165	13.7	74	0.9	582	6.8	509	6
Belgium									1627						1627	
Bulgaria	387	5.2	344	4.7	322	4.4	302	4.1	235	3.2						
Croatia					136	3.2	136	3.2	149	3.5						
Cyprus	7	0.9	10	1.2	14	1.6	9	1	4	0.5					4	0.5
Czech Republic	244	2.3	191	1.8	154	1.5	133	1.3	105	1					105	1
Denmark	170	3.1	264	4.7	298	5.3	283	5.1	231	4.1	17	0.3	211	3.7	3	0.1
Estonia	58	4.4	44	3.3	51	3.8	36	2.7	33	2.5	8	0.6	25	1.9		
Finland	278	5.2	247	4.6	249	4.6	268	4.9	276	5.1	19	0.3	257	4.7		
France	91	0.1	102	0.2	100	0.2	83	0.1	93	0.1	93	0.1				
Germany	763	0.9	810	1	686	0.8	684	0.8	740	0.9	578	0.7			162	0.2
Greece	35	0.3	38	0.3	50	0.5	32	0.3	27	0.2	27	0.2				
Hungary	60	0.6	67	0.7	53	0.5	62	0.6	65	0.7	65	0.7				
Iceland	29	9.1	25	7.9	20	6.3	16	5	28	8.6	3	0.9			25	7.7
Ireland	649	14.3	523	11.4	571	12.5	429	9.3	422	9.2	28	0.6	383	8.3	11	0.2
Italy	709	1.2	679	1.1	561	0.9	505	0.8	140	0.2					140	0.2
Latvia	322	15.2	318	15.3	329	16.1	303	15	262	13.1	62	3.1	200	10		
Lithuania	71	2.3	60	2	23	0.8	35	1.2	26	0.9	26	0.9				
Luxembourg	18	3.6	16	3.1	26	5	38	7.1	32	5.8	1	0.2	11	2	20	3.6
Malta	20	4.8	35	8.4	18	4.3	17	4	22	5.2	0	0	21	4.9	1	0.2
Netherlands	1794	10.8	1735	10.4	1525	9.1	1305	7.8	1215	7.2	141	0.8	1065	6.3	9	0.1
Norway	764	15.7	763	15.5	706	14.2	738	14.6	695	13.6	22	0.4	673	13.2		
Poland	128	0.3	104	0.3	78	0.2	1541	4	68	0.2	68	0.2				
Portugal	16	0.2	26	0.2	28	0.3	24	0.2	48	0.5	19	0.2			29	0.3
Romania	486	2.4	412	2	361	1.8	302	1.5	266	1.3	247	1.2	19	0.1		
Slovakia	209	3.9	171	3.2	159	2.9	194	3.6	182	3.4	81	1.5	101	1.9		
Slovenia	42	2.1	71	3.5	41	2	52	2.5	39	1.9	12	0.6	27	1.3		
Spain	662	1.4	522	1.1	525	1.1	645	1.4	633	1.4	633	1.4				
Sweden	1589	17	1389	14.8	1606	16.9	1673	17.5	1909	19.8	106	1.1	1667	17.3	136	1.4
United Kingdom**	6036	10.5	7876	13.6	8761	15	9149	15.6	11705	19.8	337	0.6	9129	15.4	2239	3.8
Total EU/EEA	16370	3.4	17598	3.6	18283	3.7	19664	4.0	22442	4.2	2667	0.6	14371	9.8	5020	1.3

† Data presented by date of diagnosis.
* Includes the cases reported by countries as acute, chronic or unknown using the differentiation criteria
** Excludes data from Scotland

Figure 1. Rate of reported acute hepatitis B cases* per 100 000 population, EU/EEA, 2014

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

* Countries were included if they were able to present data by disease status or they used a case definition that included only acute cases (e.g. EU 2008).
** Underreporting of acute hepatitis B in France was estimated at 76.5% in 2013.
*** UK data exclude Scotland

In 2014, 15 countries submitted data on chronic infections, ranging from 0.1 cases per 100 000 in Romania to 17.3 in Sweden (Table 2). The United Kingdom reported 63.5% of all chronic cases reported in 2014.

In 2014, the overall reporting rate for acute cases of hepatitis B (0.6 per 100 000) was considerably lower than the rate for chronic cases diagnosed and has shown a steady decline since 2006 (1.3 per 100 000) (Figure 2). No country showed an increase in their rate of acute cases over the reporting period, and 9 of the 16 countries that reported consistently over this time period reported a steady decline in the reported number of acute cases. The rate of reported chronic infections increased steadily over time: from 5.7 per 100 000 in 2006 to 9.8 in 2014.

Figure 2. Rate of acute and chronic hepatitis B cases per 100 000 population, EU/EEA, 2006–2014

Note: Logarithmic scale

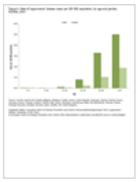
Source: Country reports from Austria, Bulgaria, Cyprus, Denmark, Estonia, Finland, France*, Germany, Greece, Hungary, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom**.

* Underreporting of acute hepatitis B in France was estimated at 76.5% in 2013.
** UK data exclude Scotland

Epidemiology: age and gender

In 2014, 12 284 cases of hepatitis B were reported in males (5.1 per 100 000) and 8 334 cases were in females (3.3 per 100 000). This represents a male-to-female ratio of 1.5 to 1. The male-to-female ratio was higher among acute cases (2.2 to 1) than among chronic cases (1.4 to 1). One third of all cases (33.8%) were in the 25–34-year age group. The age distributions among reported cases of acute and chronic infections were similar (Figure 3), and the proportion of both acute and chronic cases aged under 25 has declined over time from 26.8% of acute cases and 21.4% of chronic cases in 2006, to 13.5% and 11.9%, respectively.

Figure 3. Rate of reported acute and chronic hepatitis B cases per 100 000 population, by age group, EU/EEA, 2014

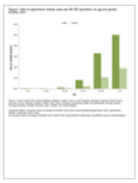


Source: Country reports from Austria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France*, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom**.

* Underreporting of acute hepatitis B in France was estimated at 76.5% in 2013.
** UK data exclude Scotland

The age distribution among male and female acute cases was similar, although for all age categories above 25 years of age the rates were higher among males than females (Figure 4).

Figure 4. Rate of reported acute hepatitis B cases per 100 000 population, by age group and gender, EU/EEA, 2014



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

* Underreporting of acute hepatitis B in France was estimated at 76.5% in 2013.
** UK data exclude Scotland

Epidemiology: route of transmission

In 2014, data on transmission were complete for only 2 340 (10.4%) of the reported hepatitis B cases. For the 836 acute cases with complete information, heterosexual transmission was most commonly reported (29.9%), followed by nosocomial transmission (17.9%), transmission through non-occupational injuries (12.0%), transmission among men who have sex with men (11.8%) and transmission through injecting drug use (9.3%) (Figure 5). Italy, Poland, and Romania accounted for 73.5% of the acute cases attributed to nosocomial transmission. Mother-to-child transmission was the most common route of transmission reported for the 1 466 chronic cases with complete information (59.5%), followed by transmission through 'other' routes (15.5%), heterosexual transmission (7.6%) and transmission through injecting drug use (4.2%). Among chronic cases attributed to mother-to-child transmission, 93.1% were reported by three countries (Denmark, the Netherlands, and Sweden). Of the chronic cases attributed to mother-to-child transmission, 89.4% were classified as imported. Transmission category over time showed no obvious trends among either acute or chronic cases.

Figure 5. Transmission category of hepatitis B cases by acute and chronic disease status, EU/EEA, 2014*

Source: Country reports from Austria, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Italy, Latvia, Lithuania, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Sweden, and the United Kingdom**.

* Among cases where transmission status is known
** UK data exclude Scotland

Epidemiology: importation status

In 2014, of 6 518 cases (29.0%) with information on importation status, 3 879 (59.5%) were reported by 20 countries as imported. The majority of these cases (92.3%) were chronic, and 3 091 (76.7%) were reported by three countries (the Netherlands, Norway and Sweden). The proportion of chronic cases (79.4%) reported as imported was higher than the proportion of acute cases (10.6%). Data completeness varies across countries, but among countries with complete data on importation status, the proportion of cases classified as imported ranged from 0% (Estonia, Hungary and Romania) to 100% (Sweden).

Epidemiology: outcome

Data on the outcome of infection was reported for 4 929 (21.9%) of cases in 2014. Of these cases, 35 (0.7%) were reported to have died from causes related to hepatitis B. This proportion has remained stable since 2006.

Discussion

High numbers of newly diagnosed hepatitis B infections are reported from across Europe, with the majority of these infections classified as chronic. Across countries, the distribution of both acute and chronic cases varies considerably. This geographical variation reflects both the differences in local testing and reporting practices as well as underlying epidemiological differences. There are no striking geographical trends in reported cases of acute hepatitis B, but the three countries with the highest reported rates (Bulgaria, Latvia and Slovakia) are located in the eastern parts of Europe where prevalence is known to be highest [1]. The geographical trends for reported chronic hepatitis B cases are also not clear as data for many countries are missing. However, the highest rates are found in the north European countries, which is contrary to what may be expected based on the results from seroprevalence surveys. However, it is possible that many of these surveys may underestimate the true prevalence as these studies may not include migrant groups among whom prevalence may be high [2]. This discrepancy highlights the difficulty in interpreting routine surveillance data for chronic infections which are mostly asymptomatic until late stages of the disease. Indeed, the data are more reflective of local testing policies, with higher rates among countries such as the United Kingdom and the Netherlands which are known to have low prevalence but comprehensive testing programmes [3, 4]. Although data are missing from several northern European countries, they dominate the reporting of chronic hepatitis B cases across Europe, accounting for a substantial proportion of the cases, and as a result have a strong influence on the trends.

Several countries made changes to their surveillance systems, which makes a clear interpretation of the trends over time more difficult. There was an increase in the number of countries reporting data in recent years but each year the number of countries reporting data has varied. The overall trend for acute cases declined over time up to 2012, and this decline is most likely related to the impact of national vaccination programmes [5]. The stabilising overall rate of acute cases observed in 2013 and 2014, which may be related to additional countries reporting in recent years, conceals a continued decline in acute cases in many of the reporting countries. The overall number and rate of chronic cases has continued to rise over time, and this increase is most likely related to changes in reporting methods as well as increased efficiency in local testing practices among key populations such as migrants and prisoners [6, 7].

The influence of migration on reported cases of hepatitis B in Europe is strong for many countries, especially for chronic infections. While data on importation status are incomplete, with no information for 12 countries in 2014 (including the United Kingdom), data from most of the north-western European countries with complete reporting indicate that a high proportion of newly diagnosed chronic infections are considered to have been acquired in a different country. In recent decades, migrants to many countries in north and western Europe have come from countries with high prevalence of hepatitis B, and prevalence among some of these migrant groups is often high [2]. Migration is reported to have had an impact on the epidemiology of hepatitis B in some northern and north-western European countries, and this highlights the importance of monitoring routine surveillance indicators of migration, such as importation status [7].

In terms of transmission, while data completeness was better for acute cases than chronic cases, the overall incompleteness of the reported data impairs the interpretation of the differences between countries, and it is likely that the data from across Europe are not fully representative. The most common routes of transmission reported among acute cases include heterosexual transmission, nosocomial transmission, non-occupational injury, transmission among men who have sex with men and transmission through injecting drug use. Although nosocomial transmission is an uncommon route of transmission for acute cases in most European countries, it remains a key route of transmission in some, such as Italy, Poland and Romania, highlighting the importance of maintaining robust infection control practices across healthcare settings. Mother-to-child transmission is the most common route of transmission among reported chronic cases but is dominated by the large number of cases reported by three north European countries, with most of these cases classified as being imported. The validity of the reported route of transmission among imported cases is not known and could form a subject for future study. Unfortunately, changes over time in the completeness of reporting of transmission data impede comparisons over the period.

Public health conclusions

Robust epidemiological information is essential to inform effective prevention and control priorities and to assess the impact of implemented strategies. A clear interpretation of hepatitis B data collected through routine surveillance remains challenging due to the asymptomatic nature of chronic infections, differences in testing programmes, continued differences in surveillance practices between countries and data quality issues. Despite such challenges, the high numbers of reported cases (especially of chronically infected persons) and diversity in reported routes of transmission across Europe suggest that countries should continue to maintain and strengthen local prevention and control programmes to interrupt transmission and prevent further infections. Indeed, with evidence of ongoing transmission and the importation of cases to many countries, there is a clear need for countries to improve the quality of surveillance data, especially data on the country of birth and whether cases are considered to be imported, to improve the data utility. Further work is also needed to assist countries in adopting the current EU case definition to increase the standardisation of the data across countries. ECDC will continue to support Member States in this area and will develop alternative epidemiological methods to complement routine surveillance, such as seroprevalence and sentinel surveys.

References

1. Hahne S, Veldhuijzen IK, Wiessing L, Lim T-A, Salminen M, Van de Laar M. Infection with hepatitis B and C virus in Europe: a systematic review of prevalence and cost-effectiveness of screening. BMC Infect Dis. 2013 Apr 18;13:181.

2. Sharma S, Carballo M, Feld JF, Janssen HLA. Immigration and viral hepatitis. J Hepatol. 2015; 63(2): 515-522.

3. Duffell EF, van de Laar MJ. Survey of surveillance systems and select prevention activities for hepatitis B and C, European Union/European Economic Area, 2009. Euro Surveill. 2015;20(13):pii=21080.

4. European Centre for Disease Prevention and Control. Surveillance and prevention of hepatitis B and C in Europe. Stockholm: ECDC; 2010.

5. Ott JJ, Stevens G A, Groeger J, Wiersma ST. Global epidemiology of hepatitis B virus infection: New estimates of age-specific HBsAg seroprevalence and endemicity. Vaccine 2012; (30) 2212– 2219.

6. Kirwan P, Evans B, Sentinel Surveillance of Hepatitis Testing Study Group, Brant L. Hepatitis C and B testing in English prisons is low but increasing. J Public Health. 2011 Jun;33(2):197-204.

7. Chu JJ, Wörmann T, Popp J, Pätzelt G, Akmatov MK, Krämer A, Reintjes R. Changing epidemiology of hepatitis B and migration – a comparison of six Northern and North-Western European countries. Eur J Public Health. 2013 Aug;23(4):642-7.

Additional information

ECDC Surveillance Atlas of Infectious Diseases

European Centre for Disease Prevention and Control. Hepatitis B surveillance in Europe – 2013. Stockholm: ECDC; 2015.

Duffell EF, van de Laar MJ, Amato-Gauci AJ. Enhanced surveillance of hepatitis B in the EU, 2006–2012. J Viral Hepat. 2015 Jul;22(7):581-9.

Annex

Table. Hepatitis B, surveillance systems overview, 2014

Download Excel version

_____

* The European Surveillance System (TESSy) is a system for the collection, analysis and dissemination of data on communicable diseases. EU Member States and EEA countries contribute to the system by uploading their infectious disease surveillance data at regular intervals.