

## SURVEILLANCE REPORT

### Annual Epidemiological Report for 2015

# Hepatitis C

#### Key facts

- In 2015, 34 651 cases of hepatitis C were reported from 28 EU/EEA Member States, a crude rate of 8.6 per 100 000 population.
- Of the cases reported, 1.0% were classified as acute, 12.7% as chronic, 69.5% as 'unknown' and 16.8% were not classified.
- Hepatitis C is more commonly reported among men than women, with a male-to-female ratio of 1.9 to 1. Just over half (50.8%) of all hepatitis C cases reported in 2015 were aged between 25 and 44 years, and 6.9% of cases were under 25 years of age.
- Only 14.4% of the cases included data on the mode of transmission, and of these, the most commonly reported was injecting drug use, which accounted for 75.3% of those cases with complete information on transmission status.
- Between 2006 and 2015, the overall number of cases diagnosed and reported across all EU/EEA Member States increased by 26.1%. The rate fluctuated between 7.3 and 9.4 per 100 000 with a steady increase between 2010 and 2014.
- The interpretation of hepatitis C data across countries remains problematic, with ongoing differences in surveillance systems and difficulties in defining reported cases as acute or chronic. With hepatitis C, a largely asymptomatic disease until the late stages, surveillance based on notification data is challenging, with data reflecting testing practices rather than true occurrence of disease.

#### Methods

This report is based on data for 2015 retrieved from The European Surveillance System (TESSy) on 4 November 2016. 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 [1].

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

A subset of the data used for this report is available through the interactive *Surveillance atlas of infectious diseases* [3].

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This report includes data on newly diagnosed cases of hepatitis C virus (HCV) infection reported to ECDC by EU/EEA countries. Countries were requested to follow the EU 2012 case definition for reporting at the European level (Commission Implementing Decision of 8 August 2012 amending Decision 2002/253/EC laying down case definitions for reporting communicable diseases to the Community network under Decision No 2119/98/EC of the European Parliament and of the Council), but other case definitions were also accepted.

Acute and chronic hepatitis C infections were differentiated by countries using the following definitions:

#### **Acute stage**

Recent HCV seroconversion (prior negative test for hepatitis C in last 12 months)

OR detection of hepatitis C virus nucleic acid (HCV RNA)

OR hepatitis C virus core antigen (HCV-core) in serum/plasma and no detection of hepatitis C virus antibody (negative result).

#### **Chronic stage**

Detection of hepatitis C virus nucleic acid (HCV RNA) or hepatitis C core antigen (HCV-core) in serum/plasma in two samples taken at least 12 months apart (In the event that the case was not notified the first time.)

#### **Unknown**

Any newly diagnosed case which cannot be classified in accordance with the above definition of acute or chronic infection.

Sixteen countries submitted national data in 2015 based on the current EU case definition; five countries used the previous 2008 EU case definition, and seven countries (Belgium, Denmark, Germany, Italy, Latvia, Luxembourg and Romania) used national case definitions. The EU 2012 case definition is similar to the EU 2008 case definition, but includes detection of hepatitis C core antigen as an additional diagnostic criterion. Both case definitions capture all acute and chronic laboratory-diagnosed cases of hepatitis C. All reported cases were included in the analysis, regardless of which case definition was used. The data collected represent confirmed cases; however, a few countries submitted 'probable' cases using alternative case definitions.

In seven countries (Cyprus, the Czech Republic, 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 C data are presented by the 'date of diagnosis' or, 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 in a few countries.

Italy reported 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 analysis by age and gender. The other data source 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 population coverage. National rates were therefore not calculated for Belgium.

## **Epidemiology: overall trends**

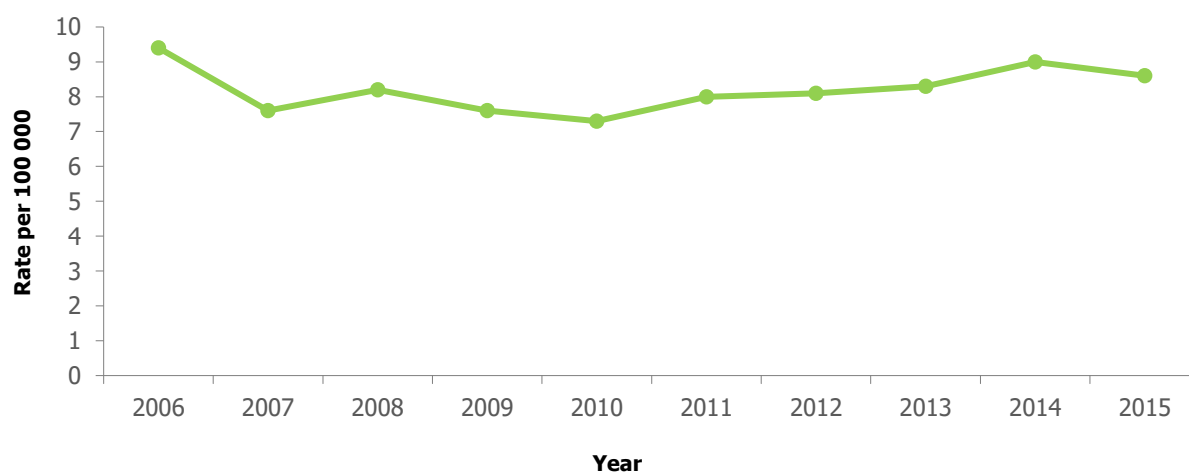
In 2015, 28 EU/EEA Member States reported 34 651 cases of HCV infection, a small decrease of 4.0% over the previous year. No data were reported from France, Liechtenstein and Spain. The crude rate of HCV infection was 8.6 per 100 000 population. Between 2006 and 2015, the rate across all countries fluctuated between 7.3 and 9.4 per 100 000 but showed a steady increase between 2010 and 2014 (Figure 1). Of the 34 637 cases reported in 2015, 346 (1.0%) were reported as acute, 4 394 (12.7%) as chronic, 24 087 cases (69.5%) were reported as 'unknown', and 5 824 cases (16.8%) could not be classified due to an incompatible data format.

Country-specific rates ranged from 0.1 cases per 100 000 in Greece to 79.1 cases per 100 000 in Latvia (Table 1). The United Kingdom accounted for 39.2% of all reported cases. Both Austria and Germany had marked reductions in the overall rate of HCV infection between 2014 and 2015 (23.2 cases per 100 000 to 18.6 cases per 100 000 in Austria; 7.2 cases per 100 000 to 5.9 cases per 100 000 in Germany).

**Table 1. Reported hepatitis C cases: number and rate per 100 000 population, EU/EEA, 2011–2015**

Country	2011		2012		2013		2014		2015							
	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	1135	13.6	1097	13	1016	12	1975	23.2	1591	18.6	48	0.6	768	9	775	9
Belgium			1031		1024		1129		1299							
Bulgaria	60	0.8	92	1.3	95	1.3	90	1.2	85	1.2						
Croatia			171	4	202	4.7	144	3.4	155	3.7						
Cyprus	57	6.8	48	5.6	36	4.2	30	3.5	2	0.2					2	0.2
Czech Republic	812	7.7	796	7.6	930	8.8	886	8.4	877	8.3					877	8.3
Denmark	299	5.4	264	4.7	273	4.9	265	4.7	210	3.7	9	0.2	201	3.6		
Estonia	210	15.8	245	18.5	276	20.9	334	25.4	213	16.2	10	0.8	203	15.5		
Finland	1135	21.1	1165	21.6	1172	21.6	1224	22.5	1164	21.3					1164	21.3
Germany	5077	6.3	4976	6.2	5174	6.4	5821	7.2	4801	5.9					4801	5.9
Greece	18	0.2	43	0.4	22	0.2	18	0.2	14	0.1	3	<0.1	11	0.1		
Hungary	43	0.4	38	0.4	46	0.5	43	0.4	18	0.2	18	0.2				
Iceland	72	22.6	51	16	72	22.4	38	11.7	44	13.4					44	13.4
Ireland	1254	27.4	1026	22.4	778	16.9	702	15.2	672	14.5	20	0.4	72	1.6	580	12.5
Italy	234	0.4	221	0.4	240	0.4	200	0.3	207	0.3					207	0.3
Latvia	1324	63.8	1356	66.3	1336	66	1752	87.5	1571	79.1	59	3	1512	76.1		
Lithuania	43	1.4	40	1.3	59	2	34	1.2	23	0.8					23	0.8
Luxembourg	74	14.5	53	10.1	68	12.7	68	12.4	58	10.3					58	10.3
Malta	18	4.3	24	5.7	14	3.3	14	3.3	10	2.3			7	1.6	3	0.7
Netherlands	68	0.4	57	0.3	65	0.4	52	0.3	70	0.4	70	0.4				
Norway	1675	34	1513	30.3	1318	26.1	1213	23.7	1186	23					1186	23
Poland	2241	5.9	2270	6	2644	6.9	3551	9.3	4285	11.3						
Portugal	45	0.4	42	0.4	21	0.2	85	0.8	215	2.1	20	0.2	82	0.8	113	1.1
Romania	80	0.4	132	0.7	127	0.6	104	0.5	60	0.3	58	0.3	2	<0.1		
Slovakia	304	5.6	230	4.3	314	5.8	397	7.3	325	6	24	0.4	301	5.6		
Slovenia	95	4.6	102	5	89	4.3	64	3.1	65	3.2	7	0.3	58	2.8		
Sweden	2154	22.9	1995	21	2012	21.1	1827	18.9	1870	19.2					1870	19.2
United Kingdom	12138	19.3	13474	21.2	13757	21.5	14026	21.8	13561	20.9			1177	1.8	12384	19.1
Total EU/EEA	30665	8	32552	8.2	33180	8.3	36086	9	34651	8.6	346	0.4	4394	3.2	24087	9

Note: Data presented by date of diagnosis; columns for 2015 include cases reported by countries as acute, chronic or unknown using the above differentiation criteria.

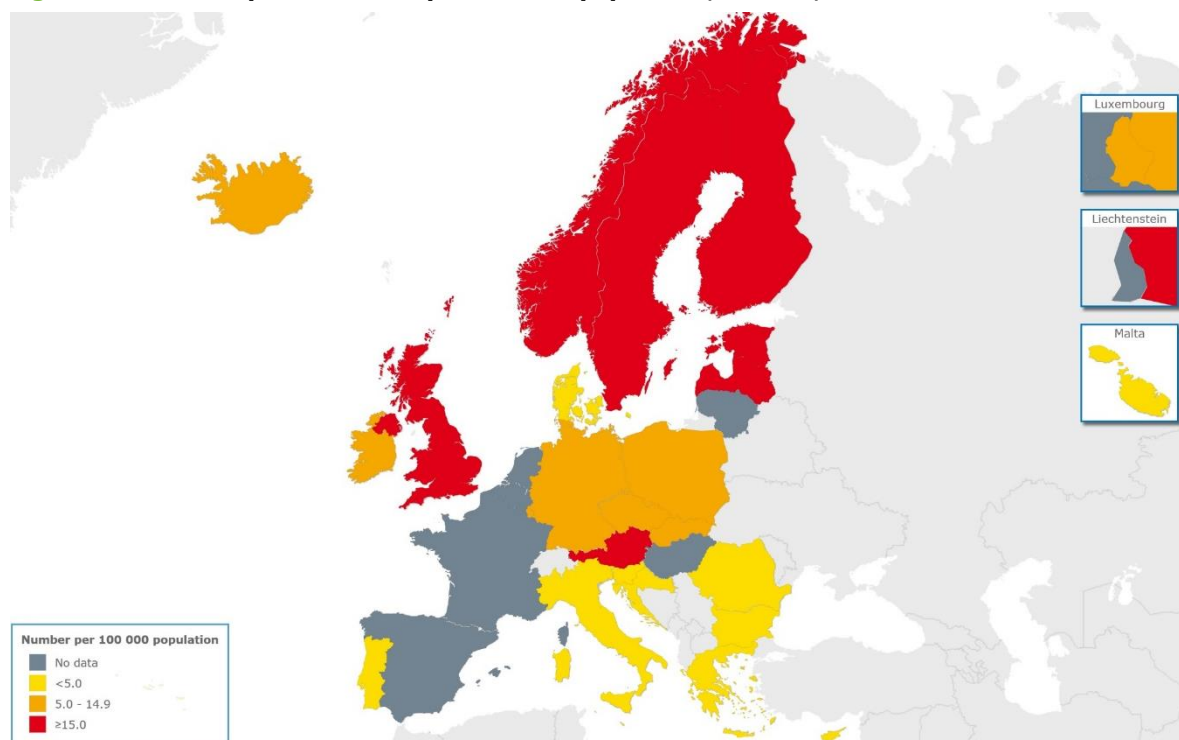
**Figure 1. Hepatitis C cases, rate per 100 000 population, EU/EEA, 2006– 2015**

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

Note: Countries included if surveillance system includes data on both acute and chronic cases.

In 2015, 12 countries were able to provide data on acute cases (Table 1). The rate of reported acute cases was 0.4 per 100 000 population, ranging from <0.1 in Greece to 3.0 in Latvia. Twelve countries submitted data on chronic infections. The notification rate of chronic cases was 3.2 per 100 000, ranging from <0.1 in Romania to 76.1 in Latvia. The rate of cases classified as unknown ranged from 0.2 cases per 100 000 in Cyprus to 23 in Norway. Notification rates were mostly higher in north European countries than in south European countries (Figure 2).

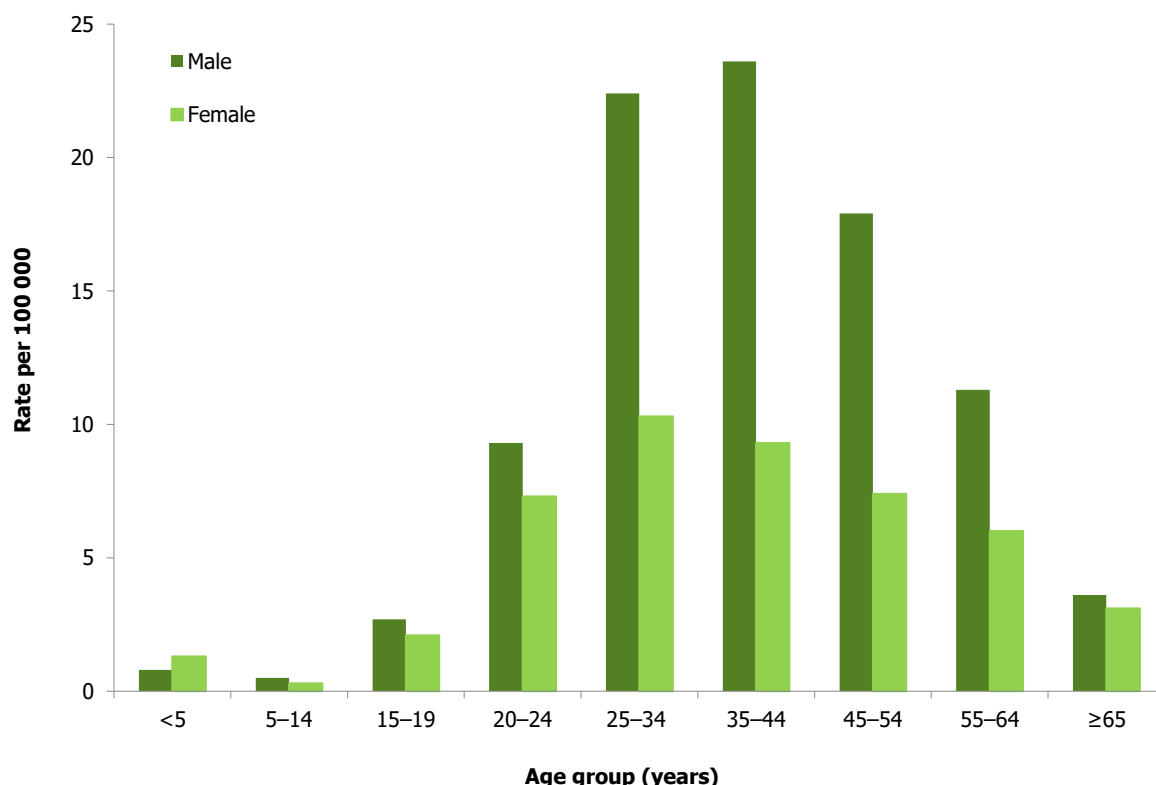
**Figure 2. Rate of hepatitis C cases per 100 000 population, EU/EEA, 2015**



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

## Epidemiology: age and gender

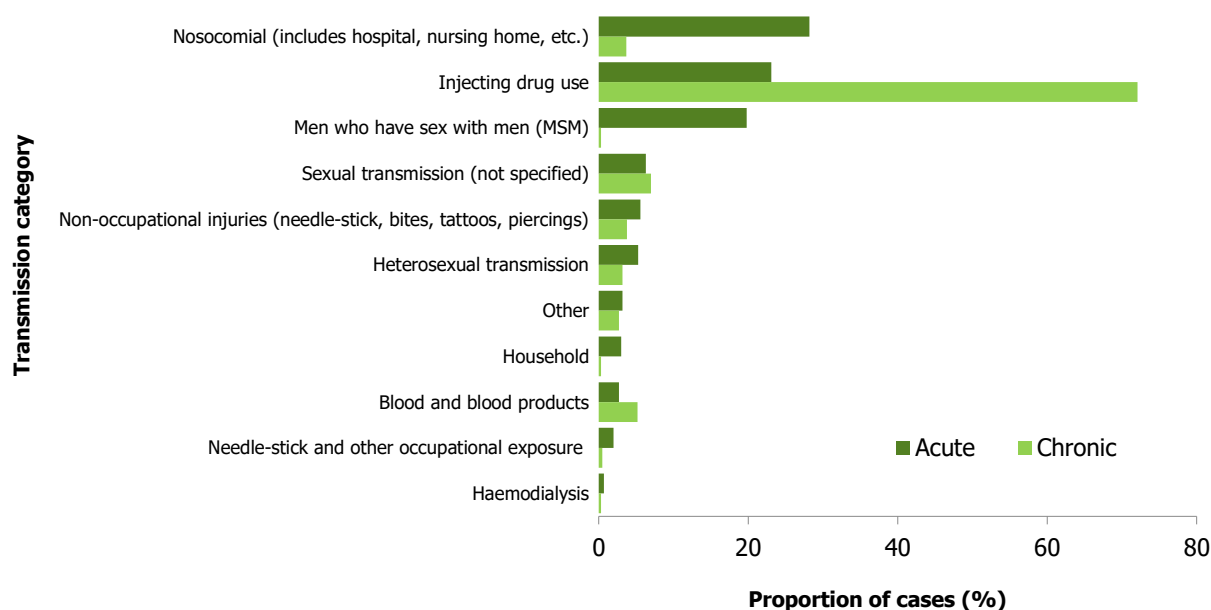
In 2015, 21 612 cases were reported in males (11.3 per 100 000) and 11 565 cases were in females (5.8 per 100 000). This represents a male-to-female rate of 1.9 to 1. Approximately half (50.8%) of all cases were in the 25–44-year age group. Rates were higher among males than females for all age categories except for those aged under five years, and the age distributions among males and females were similar (Figure 3). The most affected age group among males was between 35 and 44 years of age (23.6 cases per 100 000); among females, the age group between 25 and 34 years of age (10.3 cases per 100 000) was the most affected. There was a difference in the age distributions of acute and chronic cases, with 13.3% of acute cases and 5.2% of chronic cases under 25 years of age. The proportion of all cases aged under 25 years of age declined steadily from 13.2% in 2006 to 6.9% in 2015.

**Figure 3. Hepatitis C cases, rate per 100 000 population, by age and gender, EU/EEA, 2015**

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

## Epidemiology: route of transmission

Data regarding the most likely route of transmission of hepatitis C were complete for only 4 976 (14.4%) cases in 2015. The most commonly reported route of transmission across all disease categories was injecting drug use, which accounted for 75.3% of cases with complete information. The percentage of injecting drug use among cases with a known transmission route was lower among acute cases (23.1%) than among those classified as chronic (72.1%) or 'unknown' (80.8%) (Figure 4). Among those categorised as acute cases, the most commonly reported route of transmission was nosocomial transmission (28.2%). Of the cases attributed to nosocomial transmission, 85.8% were reported by two countries (Italy and Romania). Other key routes of transmission among acute cases included transmission among men who have sex with men (19.8%), unspecified sexual transmission (6.3%), non-occupational injuries (5.6%) and heterosexual transmission (5.3%). Between 2014 and 2015, there was a 67.1% increase in the number of acute cases attributed to transmission among men who have sex with men. This increase is largely driven by the increase in cases with transmission among men who have sex with men from 32 to 53 reported by the Netherlands, which corresponds to a 65.6% increase over this period.

**Figure 4. Transmission category of hepatitis C cases by acute and chronic disease status, EU/EEA, 2015**

Source: Country reports from Austria, Denmark, Estonia, Hungary, Ireland, Italy, Latvia, Malta, the Netherlands, Portugal, Romania, Slovakia, Slovenia, and the United Kingdom.

## Epidemiology: importation status

In 2015, 20 countries provided data for 9 299 cases (26.8%) on whether a case was considered to have been 'imported' from outside the reporting country or acquired in the country itself. Of those cases, 1 729 (18.6%) were reported as being imported.

## Discussion

The number of newly diagnosed hepatitis C cases reported from countries across Europe remains at a high level, with considerable variation in the rates of cases between the countries. This high burden of infection with variation between countries is consistent with evidence from seroprevalence surveys. According to a recent systematic review, 5.6 million individuals are chronically infected with HCV in EU/EEA countries, with national estimates of anti-HCV prevalence in the general population ranging between 0.1% and 5.9% [4]. The burden of disease presents a serious public health challenge for national health systems. While the incidence of new infections has declined in many European countries due to implementation of prevention strategies targeting transmission through injecting drug use and healthcare, modelling suggests that morbidity and mortality will continue to increase [5,6].

The number of countries reporting hepatitis C surveillance data has increased in recent years, but data analysis and interpretation remain challenging on account of the incompleteness of data and heterogeneity in national surveillance systems and practices. Data completeness for several variables has declined in the last two years but the number of countries using the 2012 EU case definition has remained stable. The changes in the rates reported from Austria and Germany between 2014 and 2015 are known to relate to the changes in national surveillance practices in these countries. Only fifteen countries provided data using the current EU case definition in 2015, and this hampers the ability to compare data across countries. Countries still have difficulty defining cases as acute or chronic, and the majority of cases reported are classified as 'unknown'. It is likely that most of these 'unknown' cases are chronic infections as acute hepatitis C is difficult to diagnose. The variation in notification rates between countries is likely to be related to differences in local testing practices as hepatitis C is mostly asymptomatic, so most newly diagnosed cases are probably identified through local screening initiatives. Indeed, many northern European countries, such as the United Kingdom, which have extensive testing programmes targeting populations at risk, report the highest notification rates in the EU/EEA, but are also known from serosurveys to have low prevalence estimates [4,7]. By comparison, the countries in the east and south-east of Europe have the lowest reported rates of cases, but among the highest prevalence estimates. This discrepancy highlights the challenge of interpreting hepatitis C surveillance data and the importance of considering the data alongside other sources of information such as local testing practices and seroprevalence estimates.

Reported data indicate that hepatitis C is an infection which predominantly affects men aged 25 to 44 years, and this profile is consistent with the demographic profile of injecting drug use, the main route of transmission reported. The data are consistent with the findings of the recent systematic review of seroprevalence which found that prevalence among people who inject drugs (PWIDs) in most EU/EEA countries is high (>50%) [4]. Harm reduction programmes, as well as, more recently, treatment with the new direct-acting antiviral drugs may have contributed significantly to reducing transmission in many countries. However, the burden of infection remains high among PWIDs, and the evidence of ongoing transmission emphasises the ongoing need for comprehensive harm reduction measures targeted at this population at risk [8,9].

Among acute cases, the other main reported routes of transmission included nosocomial transmission and transmission among men who have sex with men. Reports of hepatitis C infections among HIV-positive men who have sex with men in several European countries since 2000 have resulted in many countries scaling up targeted prevention and control responses [10]. The proportion of reported cases of hepatitis C attributed to transmission among men who have sex with men has fluctuated in recent years. With the incompleteness of the reported data, it is difficult to draw any conclusions about the recent increase in the proportion of cases attributed to this route of transmission which reflects the fluctuation in numbers reported from the Netherlands over this period. Nosocomial transmission remains an uncommon route of transmission in most European countries, but is still a key route of transmission among newly diagnosed cases in a few countries, highlighting the importance of comprehensive infection control systems within healthcare.

The World Health Assembly recently adopted the first global health sector strategy on viral hepatitis aimed at eliminating viral hepatitis as a public health threat [11]. The concept of elimination for hepatitis C is based on reducing the incidence of chronic infections by 90% and the associated mortality by 65% by 2030. Achieving these targets will require a significant scaling-up of key interventions, including interventions aimed at prevention of the transmission among people who inject drugs, and increased testing with linkage to care and treatment.

## Public health implications

Hepatitis C is a public health concern across Europe with a high burden of infection and high levels of associated morbidity and mortality. The launch of a global strategy aimed at the elimination of viral hepatitis provides a much welcomed opportunity to increase efforts aimed at tackling this epidemic. To achieve the goal of elimination, it is essential that countries have access to robust epidemiological information to plan effective prevention and control programmes. The surveillance data do not provide a clear epidemiological picture and should be carefully examined alongside information on local screening practices and available seroprevalence data. Further improvements to the quality of hepatitis C surveillance data are important to increase data utility, and ECDC is working closely with Member States to improve local surveillance systems. ECDC is also developing alternative epidemiological methods, including the generation of prevalence estimates using standardised methodologies. Despite the limitations of routine surveillance for hepatitis C, the data clearly indicate that a high proportion of the reported cases are attributed to injecting drug use, highlighting the importance of harm reduction measures. Ongoing nosocomial transmission and transmission among men who have sex with men in the region indicate that Member States should have targeted and comprehensive public health programmes tailored to the local epidemiology.



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