

SURVEILLANCE REPORT

Annual Epidemiological Report for 2016

Hepatitis C

Key facts

- In 2016, 33 860 cases of hepatitis C were reported in 29 EU/EEA Member States, corresponding to a crude rate of 7.4 cases per 100 000 population.
- Of the cases reported, 2.4% were classified as acute, 21.8% as chronic, 75.0% as 'unknown' and 0.8% 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 (51.6%) of all hepatitis C cases reported in 2016 were aged between 25 and 44 years, and 7.0% of the cases were under 25 years of age.
- Only 26.4% of the cases included data on the mode of transmission. The most commonly reported mode was injecting drug use, which accounted for 45.5% of those cases with complete information on transmission status.
- The EU/EEA rate increased steadily between 2010 and 2014, and the highest observed rate was 9.0 cases per 100 000 population. In 2015 and 2016, the EU/EEA rates were 8.0 cases and 7.4 cases per 100 000 population, respectively.
- The interpretation of hepatitis C notification 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 2016 data retrieved from The European Surveillance System (TESSy) on 31 January 2018. TESSy is a system for the collection, analysis and dissemination of data on communicable diseases.

For a detailed description of methods used to produce this report, please refer to the *Methods* chapter [1].

An overview of the national surveillance systems is available at the ECDC website [2].

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

Suggested citation: European Centre for Disease Prevention and Control. Hepatitis C. In: ECDC. Annual epidemiological report for 2016. Stockholm: ECDC; 2018.

Stockholm, June 2018

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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 apply the EU 2012 case definition for reporting at the European level [2], but other case definitions were also accepted.

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

Table 1. Criteria for differentiating acute and chronic hepatitis C

| Stage | Definition |
|---------|--|
| Acute | 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 | 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* |
| 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 [2]. Twenty countries submitted national data in 2016 based on the current EU case definition [4], five countries used the previous 2008 EU case definition, and four countries 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 collected data represent confirmed cases; however, a few countries submitted 'probable' cases using alternative case definitions. Three countries (Hungary, Lithuania and the Netherlands) only submitted data on acute cases of hepatitis C.

Hepatitis C data are presented by the 'date of diagnosis' or, if not available, by 'date used for statistics'.

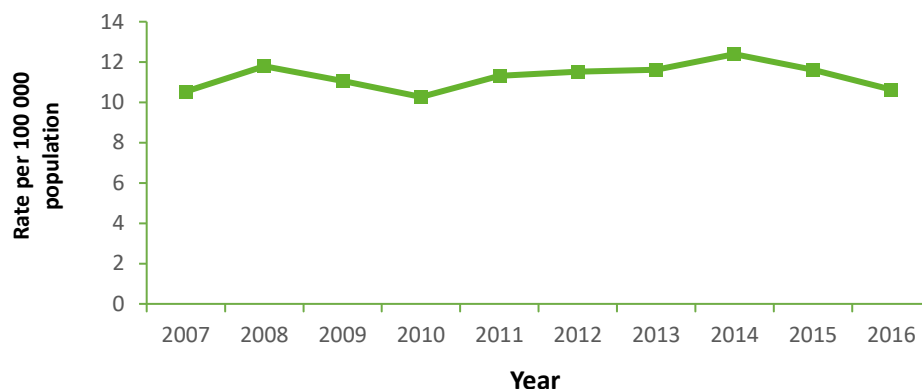
Italy reported using two data sources. One of these sources has national coverage, but includes only a limited number of variables. This source was used to calculate national rates and conduct analyses based on age group and gender. The other data source in Italy is a sentinel system that includes epidemiological data on a range of variables and covers an average of 72% of the population (2007–2016). The sentinel population is considered representative of the wider population; data were therefore scaled up 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 2016, 29 EU/EEA Member States reported 33 860 cases of HCV infection, a decrease of 6.1% over the previous year. No data were reported from France or Liechtenstein. Of the cases reported in 2016, 813 (2.4%) were reported as acute, 7 386 (21.8%) as chronic, 25 396 (75.0%) as 'unknown', and 265 cases (0.8%) could not be classified due to an incompatible data format. The crude rate of HCV infection was 7.4 per 100 000 population in 2016. Between 2007 and 2016, the overall number of cases diagnosed and reported across the 17 EU/EEA Member States that reported data consistently over this time, showed year-to-year fluctuations, increasing between 2010 and 2014 to a high of 9.0 cases per 100 000 population and then decreasing again slightly in 2015 and 2016 (Figure 1).

Country-specific rates ranged from 0.1 cases per 100 000 population in Cyprus to 76.1 cases per 100 000 population in Latvia (Table 2). The United Kingdom accounted for 38.4% of all reported cases.

Figure 1. Rate of hepatitis C cases per 100 000 population by year, EU/EEA, 2007–2016 among countries reporting consistently

Source: Country reports from Austria, the Czech Republic, Denmark, Estonia, Finland, Germany, Greece, Hungary, Ireland, Latvia, Malta, Norway, Romania, Slovakia, Slovenia, Sweden, and the United Kingdom.

Table 2. Number and rate per 100 000 population of reported hepatitis C cases in the EU/EEA by country and year, 2012–2016[†]

| Country | 2012 | | 2013 | | 2014 | | 2015 | | 2016 | | | | | | | |
|---------------------|--------------|------------|--------------|------------|--------------|------------|--------------|------------|--------------|------------|------------|------------|-------------|------------|--------------|------------|
| | 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 | 851 | 10.1 | 887 | 10.5 | 1812 | 21.3 | 1472 | 17.2 | 1386 | 15.9 | 79 | 0.9 | 624 | 7.2 | 683 | 7.9 |
| Belgium | 959 | - | 981 | - | 1062 | - | 1356 | - | 1395 | - | . | - | . | - | 1395 | - |
| Bulgaria | 92 | 1.3 | 95 | 1.3 | 90 | 1.2 | 85 | 1.2 | 81 | 1.1 | . | - | . | - | . | - |
| Croatia | 171 | 4.0 | 202 | 4.7 | 144 | 3.4 | 155 | 3.7 | 184 | 4.4 | . | - | . | - | . | - |
| Cyprus | 48 | 5.6 | 36 | 4.2 | 30 | 3.5 | 2 | 0.2 | 1 | 0.1 | . | - | 1 | 0.1 | 0 | 0.0 |
| Czech Republic | 796 | 7.6 | 930 | 8.8 | 886 | 8.4 | 970 | 9.2 | 1011 | 9.6 | 118 | 1.1 | 893 | 8.5 | 0 | 0.0 |
| Denmark | 265 | 4.7 | 275 | 4.9 | 270 | 4.8 | 268 | 4.7 | 163 | 2.9 | 6 | 0.1 | 157 | 2.8 | 0 | 0.0 |
| Estonia | 245 | 18.5 | 276 | 20.9 | 334 | 25.4 | 257 | 19.5 | 173 | 13.1 | 13 | 1 | 160 | 12.2 | . | - |
| Finland | 1165 | 21.6 | 1172 | 21.6 | 1224 | 22.5 | 1164 | 21.3 | 1147 | 20.9 | . | - | . | - | 1147 | 20.9 |
| Germany** | 4976 | 6.2 | 5177 | 6.4 | 5827 | 7.2 | 4870 | 6.0 | 4320 | 5.3 | . | - | . | - | 4320 | 5.3 |
| Greece | 43 | 0.4 | 22 | 0.2 | 18 | 0.2 | 14 | 0.1 | 80 | 0.7 | 1 | 0.0 | 79 | 0.7 | . | - |
| Hungary | 38 | 0.4 | 46 | 0.5 | 43 | 0.4 | 19 | 0.2 | 25 | 0.3 | 25 | 0.3 | . | - | . | - |
| Iceland | 51 | 16 | 72 | 22.4 | 38 | 11.7 | 44 | 13.4 | 91 | 27.4 | 6 | 1.8 | 3 | 0.9 | 82 | 24.7 |
| Ireland | 1026 | 22.4 | 779 | 17 | 702 | 15.2 | 675 | 14.6 | 639 | 13.5 | 28 | 0.6 | 61 | 1.3 | 550 | 11.6 |
| Italy | 221 | 0.4 | 199 | 0.3 | 200 | 0.3 | 207 | 0.3 | 194 | 0.3 | . | - | . | - | 194 | 0.3 |
| Latvia | 1363 | 66.7 | 1352 | 66.8 | 1780 | 88.9 | 1947 | 98.0 | 1498 | 76.1 | 55 | 2.8 | 1443 | 73.3 | . | - |
| Lithuania | 40 | 1.3 | 59 | 2.0 | 34 | 1.2 | 23 | 0.8 | 16 | 0.6 | 16 | 0.6 | . | - | . | - |
| Luxembourg | 53 | 10.1 | 68 | 12.7 | 68 | 12.4 | 58 | 10.3 | 58 | 10.1 | . | - | 0 | 0.0 | 58 | 10.1 |
| Malta | 24 | 5.7 | 14 | 3.3 | 14 | 3.3 | 10 | 2.3 | 13 | 3 | 2 | 0.5 | 8 | 1.8 | 3 | 0.7 |
| Netherlands | 57 | 0.3 | 65 | 0.4 | 52 | 0.3 | 70 | 0.4 | 47 | 0.3 | 47 | 0.3 | . | - | . | - |
| Norway | 1513 | 30.3 | 1318 | 26.1 | 1213 | 23.7 | 1186 | 23 | 771 | 14.8 | . | - | . | - | 771 | 14.8 |
| Poland | 2270 | 6.0 | 2644 | 6.9 | 3552 | 9.3 | 4285 | 11.3 | 4261 | 11.2 | 16 | 0 | 1099 | 2.9 | 3146 | 8.3 |
| Portugal | 42 | 0.4 | 21 | 0.2 | 86 | 0.8 | 250 | 2.4 | 245 | 2.4 | 19 | 0.2 | 125 | 1.2 | 101 | 1.0 |
| Romania | 132 | 0.7 | 127 | 0.6 | 104 | 0.5 | 60 | 0.3 | 73 | 0.4 | 72 | 0.4 | 1 | 0.0 | 0 | 0.0 |
| Slovakia | 230 | 4.3 | 314 | 5.8 | 397 | 7.3 | 334 | 6.2 | 261 | 4.8 | 32 | 0.6 | 229 | 4.2 | . | - |
| Slovenia | 102 | 5.0 | 89 | 4.3 | 64 | 3.1 | 65 | 3.2 | 115 | 5.6 | 7 | 0.3 | 108 | 5.2 | . | - |
| Spain | . | - | . | - | . | - | 756 | 1.6 | 790 | 1.7 | 114 | 0.2 | 42 | 0.1 | 634 | 1.4 |
| Sweden | 1996 | 21 | 2015 | 21.1 | 1830 | 19 | 1902 | 19.5 | 1831 | 18.6 | 157 | 1.6 | 1243 | 12.6 | 431 | 4.4 |
| United Kingdom | 13474 | 21.2 | 13757 | 21.5 | 14028 | 21.8 | 13559 | 20.9 | 12991 | 19.9 | . | - | 1110 | 1.7 | 11881 | 18.2 |
| Total EU/EEA | 32243 | 8.1 | 32992 | 8.3 | 35902 | 9.0 | 36063 | 8.0 | 33860 | 7.4 | 813 | 0.4 | 7386 | 3.0 | 25396 | 7.1 |

. = Not reported

- = Not calculated

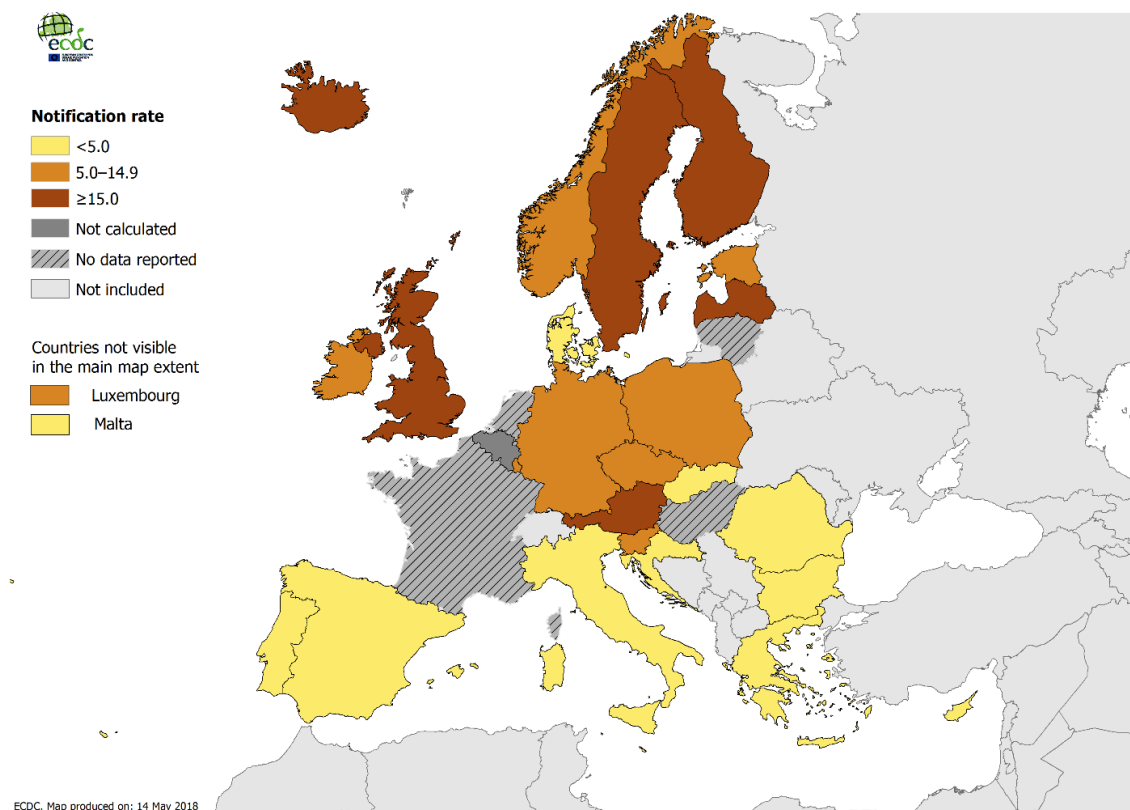
[†] Data presented by date of diagnosis.

* Includes the cases reported by countries as acute, chronic or unknown using the differentiation criteria.

** Germany uses a national case definition which changed in 2015, likely explaining the recent decrease in hepatitis C cases.

In 2016, 19 countries were able to provide data on acute cases (Table 2). The rate of reported acute cases was 0.4 cases per 100 000 population, ranging from <0.1 cases in Greece and Poland to 2.8 cases in Latvia. Eighteen countries submitted data on chronic infections. The notification rate of chronic cases was 3.0 cases per 100 000 population, ranging from 0.1 cases in Romania to 73.3 cases in Latvia. The rate of cases classified as unknown ranged from <0.1 cases per 100 000 population in Cyprus to 24.7 cases in Iceland. Overall notification rates were mostly higher in north and west European countries than in south European countries (Figure 2).

Figure 2. Rate of newly diagnosed hepatitis C cases per 100 000 population by country*, EU/EEA, 2016



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

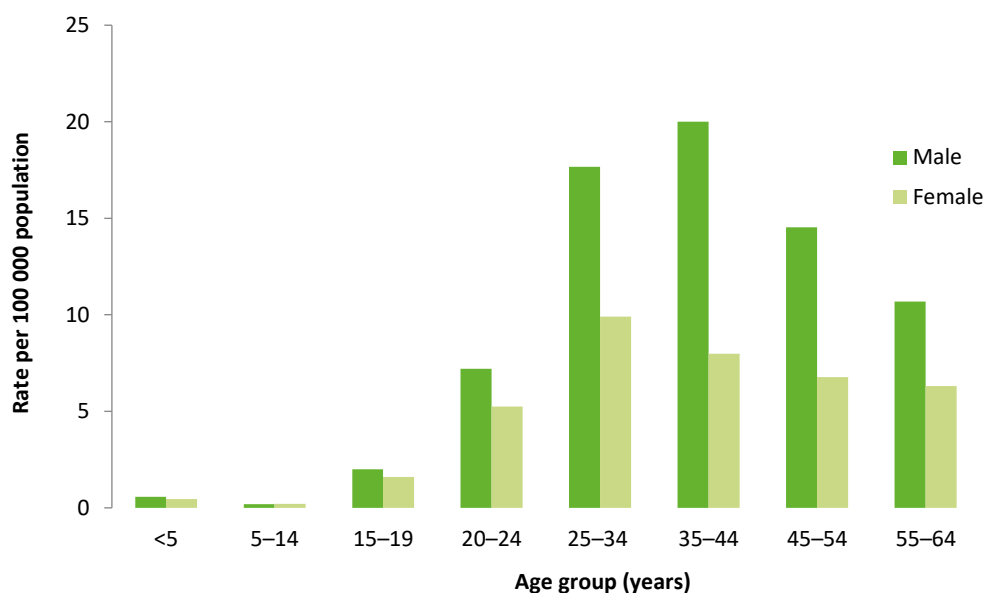
* Countries not reporting or only reporting data on acute cases are excluded.

Age and gender

In 2016, 20 922 cases were reported in males (9.8 cases per 100 000 population) and 11 399 in females (5.4 cases per 100 000 population), corresponding to a male-to-female rate of 1.9:1. Just over half (51.6%) of all cases were in the 25–44 year age group. Rates were higher among males than females for almost all age categories (Figure 3).

The age distribution for males and females was similar. The most affected age group among males were 35–44-year-olds (20.0 cases per 100 000 population). Among females, 25–34-year-olds were most affected (9.9 cases per 100 000 population). There was a difference in the age distributions of acute and chronic cases, with 15.0% of acute cases and 6.9% of chronic cases in people under 25 years of age. The proportion of cases in people under 25 years of age declined steadily: from 12.1% in 2007 to 7.0% in 2016.

Figure 3. Rate of newly diagnosed hepatitis C cases per 100 000 population by age and gender, EU/EEA, 2016

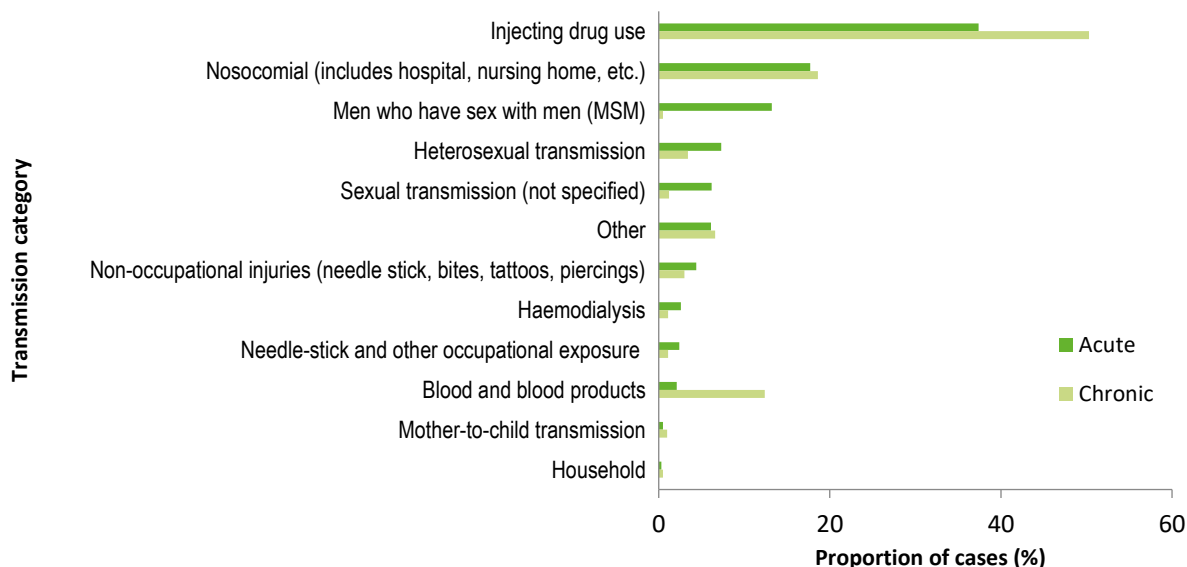


Source: Country reports from Austria, Cyprus, Czech Republic, Denmark, Estonia, Finland, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom.

Route of transmission

Data regarding the most likely route of transmission of hepatitis C were complete for only 8 952 (26.4%) cases in 2016. The most commonly reported route of transmission across all disease categories was injecting drug use, which accounted for 45.5% of cases with complete information. The percentage of injecting drug use among cases with a known transmission route was lower among acute cases (37.4%) than among those classified as chronic (50.3%) (Figure 4) or 'unknown' (43.7%). The second most common route of transmission among acute cases was nosocomial, accounting for 17.7% of acute cases, followed by male-to-male sexual contact (13.2%).

Figure 4. Transmission category of hepatitis C cases by acute and chronic disease status, EU/EEA, 2016



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

Importation status

In 2016, 24 countries provided data for 14 817 cases (43.8%) on whether a case was considered to have been 'imported' from outside the reporting country or acquired in the country itself. Of those cases, 1 216 (18.2%) were reported as imported.

Discussion

The number of newly diagnosed hepatitis C cases reported from countries across Europe remains at a high level, with considerable variation between country-specific rates. 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% [5]. 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 [6,7].

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. While the number of countries using the 2012 EU case definition has increased, nine countries still do not use the updated definition, which hampers the ability to compare data across countries. Germany uses a national case definition (which changed in 2015), likely explaining the recent decrease in cases of hepatitis C. Data completeness for several variables improved in 2016 but remains low. 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 because 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 western 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 [5,8]. Countries in the east and south-east of Europe have the lowest reported rates of cases but some of the highest prevalence estimates. This discrepancy highlights the challenges of interpreting hepatitis C surveillance data. Interpretation is heavily influenced by testing and screening practices, and it is therefore important to consider 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. This 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%) [5]. Harm reduction programmes, and, 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 need for comprehensive harm reduction measures for this at-risk population [9,10].

Among acute cases, the other main reported routes of transmission included nosocomial transmission and transmission among men who have sex with men (MSM). Reports of hepatitis C infections among HIV-positive MSM in several European countries since 2000 have resulted in many countries scaling up targeted prevention and control responses [11]. 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', which aims to eliminate viral hepatitis as a public health threat by 2030 [12]. 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 preventing 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 the WHO 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 and monitor 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 data sources, 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 implement targeted and comprehensive public health programmes tailored to the local epidemiology.

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