

Hepatitis B and C testing in the EU/EEA: progress in reaching the elimination targets

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Key messages

- Many people living with chronic hepatitis B and C infections in the European Union/European Economic Area (EU/EEA) are not aware of their infection. Testing and diagnosis of hepatitis B and C is the key step in the continuum of care to link people living with these infections to necessary care and treatment.
- The World Health Organization (WHO) European Region hepatitis action plan testing target for 2020 is for 50% of people living with chronic hepatitis B (HBV) and hepatitis C (HCV) to be diagnosed and aware of their condition. Reported data from 2017 show that the region is far from meeting this target, with around one fifth of people with HBV and one quarter of people with HCV diagnosed.
- Of the 31 countries in the EU/EEA, 19 did not report data on the proportion of HBV diagnosed and 16 did not report data on the proportion of HCV diagnosed for 2017, showing large gaps in the available data and an urgent need to improve monitoring and reporting of HBV and HCV diagnosis rates.
- HBV and HCV testing efforts must be improved in key populations disproportionately affected by chronic viral hepatitis, including people in prisons, people who inject drugs (PWIDs), migrants to the European region, pregnant women (because of the risk to their child), and people living with HIV. There are several barriers to testing, including at the individual, policy, and wider structural levels, which must be addressed in order to improve access to hepatitis testing.

Introduction

Hepatitis B and C are a public health threat in the EU, with an estimated 4.7 million people living with chronic hepatitis B virus (HBV) infection and 3.9 million living with chronic hepatitis C virus (HCV) infection in the EU/EEA countries[1]. These infections are a major cause of cirrhosis, liver cancer, and mortality. Available information indicates that many living with chronic HBV and HCV infections in the region remain undiagnosed and unaware of their infection. Testing for HBV and HCV is critical for diagnosing those living with chronic infections and linking them to treatment, leading to improved health outcomes. Testing and diagnosis are also critical for stopping ongoing transmission of HBV and HCV leading to new chronic infections.

In line with the United Nations Sustainable Development Goals, the WHO has set global and regional targets for the elimination of hepatitis B and C as a public health threat. The WHO Regional Office for Europe developed a hepatitis action plan for the European Region, with targets for 2020 for the steps along the continuum of care: testing, treatment, and cure/viral suppression. The target related to testing is 50% of people living with chronic HBV and HCV infections are diagnosed and aware of their condition.

WHO European Region action plan testing target for 2020:
50% of people living with chronic HBV and HCV infections are diagnosed and aware of their condition

This brief will present a snapshot of hepatitis B and C testing in the EU/EEA, discussing progress made towards the European action plan 2020 testing target, focussing on key populations and settings for testing, barriers to testing, and testing policies.

Progress towards testing targets in the EU/EEA

Data on the proportion of those living with chronic HBV and HCV infections diagnosed in the EU/EEA in 2017 were collected through ECDC's hepatitis B and C monitoring system [2].

Among the 12 countries reporting data on both the estimated number of people living with HBV infection and the number diagnosed (Figure 1), there were an estimated 1 597 377 people with chronic HBV infection, of whom **20.3% (range 2.4–71.8%) were reported to have been diagnosed** (Table 1). Four of the 12 countries had met or exceeded the 50% target in 2017 (Figure 1).

Among the 15 countries reporting data on both the estimated number of people living with HCV infection and the number diagnosed via RNA test (Figure 2), there were an estimated 1 422 285 people with chronic HCV infection, of whom **26.8% (range 4.1–96.8%) were diagnosed** (Table 1). Six of the 15 countries had met the 50% target in 2017 (Figure 2). See annex Table A for data disaggregated by country.

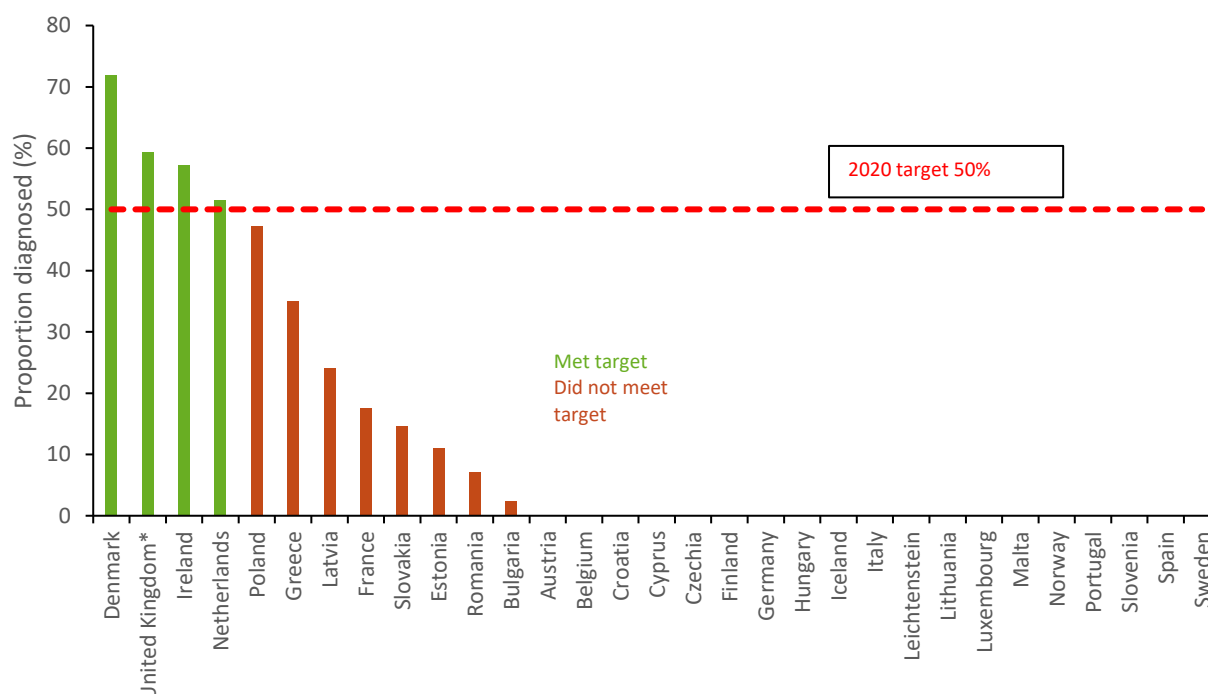
Table 1. Number and percentage of people living with HBV and HCV infection who were diagnosed in EU/EEA countries with estimates of both the numbers infected and diagnosed, 2017

	Estimated number of people living with hepatitis (country range)	Number diagnosed (country range)	% of people diagnosed (country range) <i>Target: 50%</i>
Hepatitis B (12 countries*)	1 597 377 (3 513–640 176)	323 851 (385–118 307)	20.3% (2.4–71.8%)
Hepatitis C (15 countries)	1 422 285 (250–594 591)	381 503 (193–107 574)	26.8% (4.1–96.8%)

* Data from the UK include Scotland only

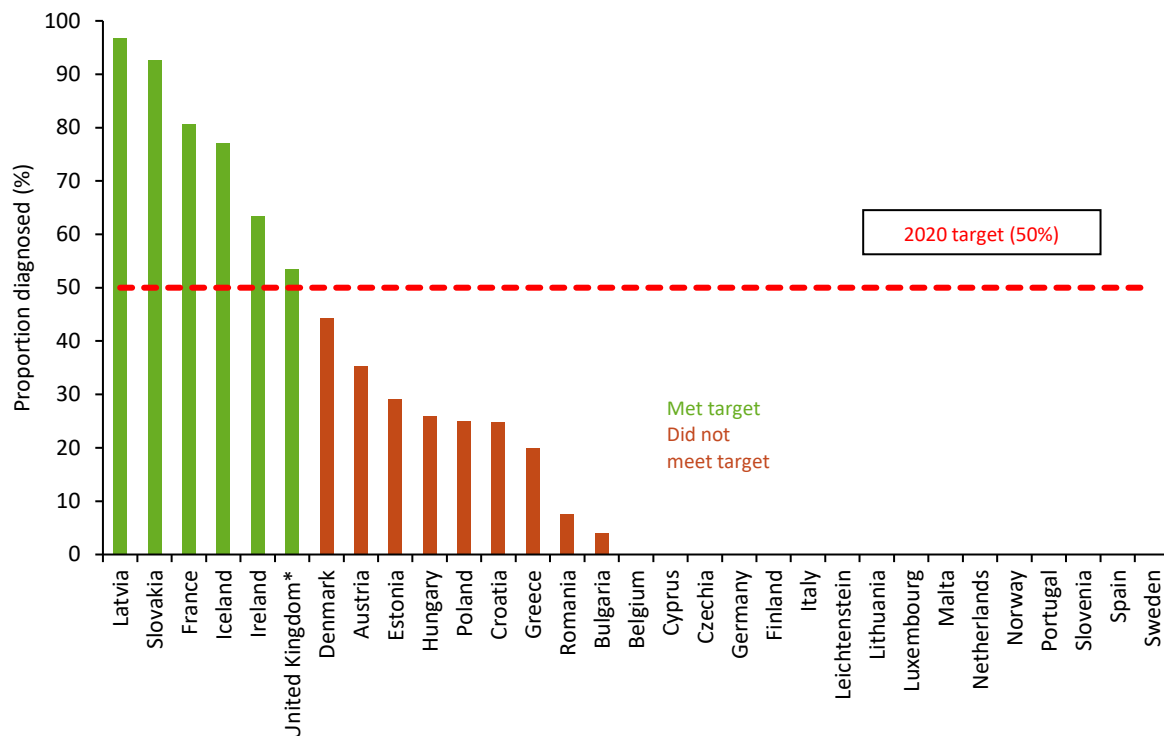
Source: Monitoring the responses to hepatitis B and C epidemics in the EU/EEA Member States, 2019 [2].

Figure 1. Proportion of people living with HBV who have been diagnosed in EU/EEA countries, 2017



*Data represent Scotland only

Source: Monitoring the responses to hepatitis B and C epidemics in the EU/EEA Member States, 2019 [2].

Figure 2. Proportion of people living with HCV who have been diagnosed in EU/EEA countries, 2017

*Data represent England and Scotland only

Source: Monitoring the responses to hepatitis B and C epidemics in the EU/EEA Member States, 2019 [2].

It is important to note that estimating the proportion of chronic HBV and HCV cases diagnosed is currently very challenging as there is a lack of robust data regarding both the numerator (number diagnosed) and the denominator (current numbers infected). Some countries reporting data only had data on numbers diagnosed from a limited time period, for example the past two or three years, and this led to an underestimation of cumulative numbers diagnosed. For HCV, the proportion diagnosed is difficult to interpret because the denominator, numbers living with chronic infections, changes over time as infected individuals are treated and cured, and some countries were unable to adjust the denominator to remove individuals who had been cured or whose infection had spontaneously resolved.

Although the available data have gaps and limitations, they indicate that, as of 2017, the EU/EEA region was far from meeting WHO's 2020 target of 50% diagnosed. Rapid improvements in testing will be needed in the coming years in countries not meeting the 50% target, and data reporting must also be improved. While no region-wide data from after 2017 are yet available, data collection planned for 2021 will provide an opportunity to address limitations in data in the rapidly changing landscape of hepatitis testing and diagnosis.

Key populations, testing settings, and barriers to testing

Populations to target for testing

There are several routes of transmission for HBV and HCV. HBV is transmitted via blood, semen, and other body fluids through the following routes: sexual transmission, patient and healthcare worker exposure in healthcare settings, injection drug use, and vertical (or 'mother to child') transmission [3]. While vertical transmission is rare within the European region, it occurs more frequently in regions of the world with a higher prevalence of HBV. Vertical transmission is frequently the route identified in those with chronic HBV infections who migrated from outside the reporting country, with 92% of all chronic cases reported in the EU/EEA with complete information attributed to vertical transmission classified as imported [3].

HCV is transmitted via blood, most commonly through injection drug use but also via sex, mostly between men who have sex with men (MSM) [4]. HBV and HCV can also be transmitted to patients nosocomially or via unscreened blood, blood products, or organ/tissue transplant. Transmission through blood or tissues occurred more widely before 1992, when screening was widely introduced [5].

Given these routes of transmission, it is critical to target the groups listed in Table 2 for HBV and HCV testing.

Table 2. Populations to target for HBV and HCV testing

Reason to target for testing	Populations
These key populations are known to be disproportionately affected with high incidence and prevalence and/or ongoing risk factors	People who inject drugs (PWID) – current or past use of injection drugs People in prison Migrants from countries of intermediate/high endemicity Men who have sex with men (MSM) People living with HIV Recipients of haemodialysis, blood, blood products, organs, and tissues
Limited epidemiological data available but overlapping risk factors with the above groups	Sex workers People experiencing homelessness
High risk of chronic infection in child if vertical transmission of HBV occurs	Pregnant women
Risk of HBV (and to a lesser extent HCV) via nosocomial transmission (ex. occupational needle stick injury)	Healthcare workers

Source: ECDC: *Public health guidance on HIV, hepatitis B and C testing in the EU/EEA: An integrated approach*. Stockholm [5].

Settings for testing

An ECDC systematic review from 2018 reviewed the evidence base for interventions to improve hepatitis B and C testing in different testing settings in the EU/EEA [6]. The review considered testing in primary care settings, hospital settings, other healthcare settings (including antenatal services, drug services, migrant clinics, pharmacies, prisons, and sexually transmitted infection (STI) clinics), and community settings. While all of these settings were found to be important, testing coverage and test positivity rates were often high in “other healthcare settings” when key populations were targeted. Offering testing to certain groups at locations they specifically attend for health purposes, such as health clinics catering to migrants or pharmacies where patients receive opioid substitution therapy (OST), could be an effective method for case finding. Routine testing in primary care settings may also provide an opportunity to find cases among people who injected drugs earlier in their lives but who are not generally considered members of a key population of people who currently use or recently injected drugs. Although limited, evidence on general population testing in primary care settings is also encouraging in areas of intermediate and high prevalence [5].

A large body of evidence supported the implementation of community-based testing services, with high testing uptake and positivity rates when MSM, PWID, and migrant populations were targeted. Evidence also supported testing services in community-based drug services. Thus, a variety of community-based testing services – both fixed-site and outreach-based – are important settings in which to target key populations who are at increased risk of HBV and HCV infection and who may face barriers to care at formal health services. Gaps in policy were identified that indicate testing in these settings could be better implemented. The review found that novel testing approaches, like rapid testing and dried blood spot (DBS) sampling, were effective in increasing testing uptake and were highly acceptable among patients and healthcare staff. There was no evidence on self-testing for HBV/HCV, but self-testing may become an important strategy to improve access to testing as these technologies become more widely available [7].

Barriers to testing

From the individual patient level to wider policy and structural levels, there are several important barriers to hepatitis testing [2, 6]. Generally, there are low levels of knowledge and awareness of HBV/HCV infections and the need to test for them among patients, the general public, and healthcare workers. The asymptomatic nature of much of the course of chronic HBV and HCV likely prevents individuals living with these infections from seeking testing. A lack of training, education, advocacy, and promotion of testing may often present a barrier to offering testing for clinicians and administrators in healthcare institutions.

Common barriers to HBV and HCV testing

- ⇒ Low levels of knowledge and awareness of these infections among healthcare workers and patients;
- ⇒ Long asymptomatic period of chronic infections prevents care-seeking;
- ⇒ Lack of training, education, promotion, and advocacy related to viral hepatitis in healthcare institutions.

In addition, many populations at risk of hepatitis B and C are socially marginalised. Poverty, unstable or unstructured lives, other health and social problems, and fear and/or experience of stigma and discrimination can prevent members of key populations from seeking and accessing testing. User fees at the point of access and a lack of testing services in convenient, accessible locations may also present barriers. At a structural level, the social marginalisation and stigmatisation of key populations and the criminalisation of injection drugs have contributed to a lack of funding and political will to tackle the epidemic of hepatitis B and C, including a dearth of robust policies for testing and diagnosis.

The Correlation European Harm Reduction Network conducted a survey of organisations that offer harm reduction services to drug users in Europe [8]. The survey found that 74% of respondents thought their country's laws and regulations on HCV testing in community settings should be changed, and 45% indicated that the requirement that community-based testers be supervised by healthcare professionals at all times was a significant barrier to testing. Of the legal barriers documented, the survey found that HCV community testing not being a priority for policy-makers was the barrier most frequently identified as being the most problematic. These findings underscore the ways in which the stigmatisation and marginalisation of key populations can contribute to an ineffective policy landscape and legal barriers to testing access.

Addressing these barriers is critical to improving testing accessibility and coverage. Educational, awareness, and health promotion campaigns and initiatives aimed at key populations, healthcare professionals, and the wider public can address stigma and the lack of knowledge and awareness [6]. Novel testing techniques and interventions, such as the use of DBS and oral sampling, and self-testing kits in the future offer opportunities to improve access to testing. Widespread implementation of testing activities in a range of community settings and the de-medicalisation of testing services can help overcome social and structural barriers for a range of key populations. The notification to public health services of cases identified in all settings is of key importance for ongoing surveillance of infections.

Testing policies and information by key population/setting

Overall policies and testing information

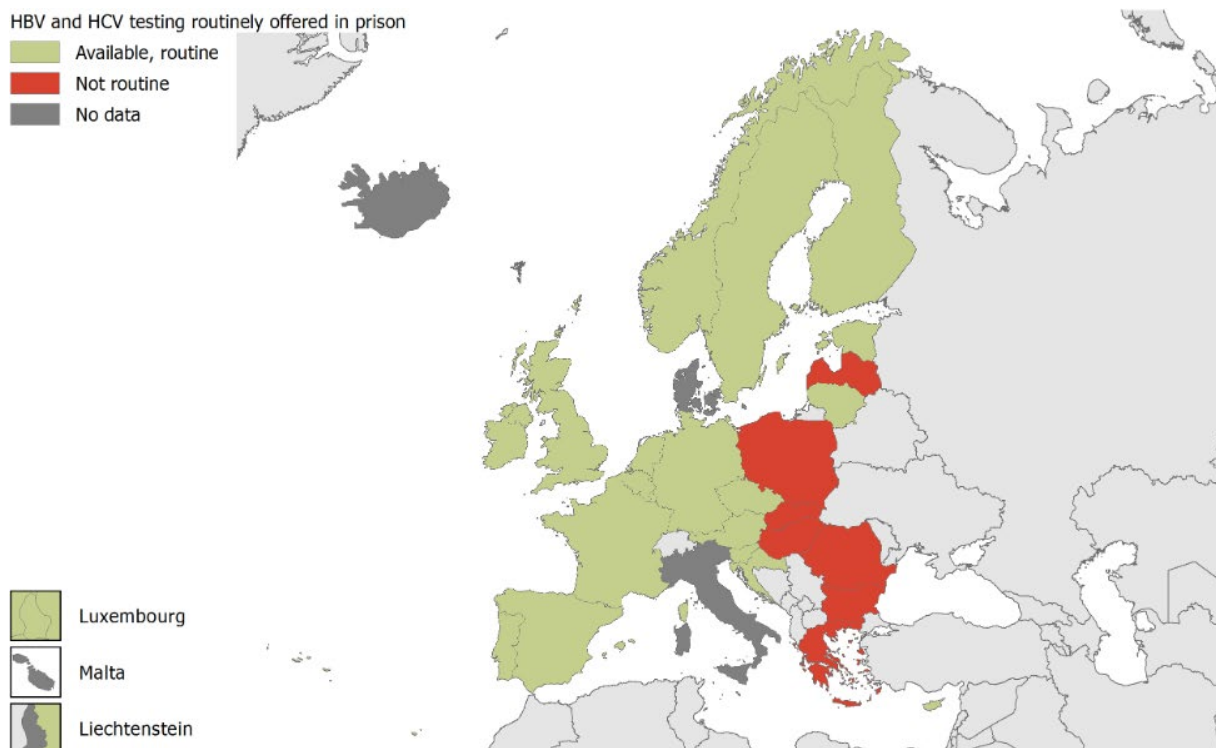
An ECDC survey of the 31 EU/EEA countries was conducted on HBV and HCV testing policy, practices, needs, and priorities in 2016-2017 [9]. There were 21 individual responses, representing 65% of the countries. Of 21 countries responding, 19 (90%) had national-level testing guidance that included HBV, of which six countries (29%) had specific HBV guidance on testing (Denmark, France, Germany, the Netherlands, Norway, and the UK). Eighteen countries (86%) had national-level testing guidance that included HCV, of which eight countries (38%) had specific HCV guidance on testing (Denmark, France, Germany, the Netherlands, Norway, Poland, Spain, and the UK).

Key populations most frequently omitted from testing guidance included commercial sex workers, MSM, people receiving tattoos or piercings in an unregulated setting, and the homeless. The most commonly stated gap was a lack of policy documents or guidance around testing for HBV (nine, or 28%) or HCV (eight, or 38%). At the implementation level, the most commonly cited gap was that risk groups were not targeted effectively; this was reported by 17 countries (81%) for HBV, and 16 countries (76%) for HCV.

This survey also collected information on the costs of hepatitis testing. Of the 21 countries responding, HBV and HCV testing was reported to be offered for free at the point of use or through reimbursed user fees in 15 (71%) countries. Only four countries (19%; Belgium, German, Estonia, and Latvia) reported that a non-reimbursed user fee was charged. However, no country reported non-reimbursed user fees as the only means of accessing testing.

People in prisons

The 2016-2017 ECDC survey reported that 11 countries (52%) had a national policy on testing of HBV and 10 countries (48%) had a national policy on testing of HCV among people in prisons [9]. More recent data from EMCDDA collected in 2019 indicate that HBV and HCV tests were routinely offered to people in prison in 19 EU/EEA countries (61%) (Figure 5).

Figure 5. HBV and HCV testing offered routinely in prisons in EU/EEA countries, 2018

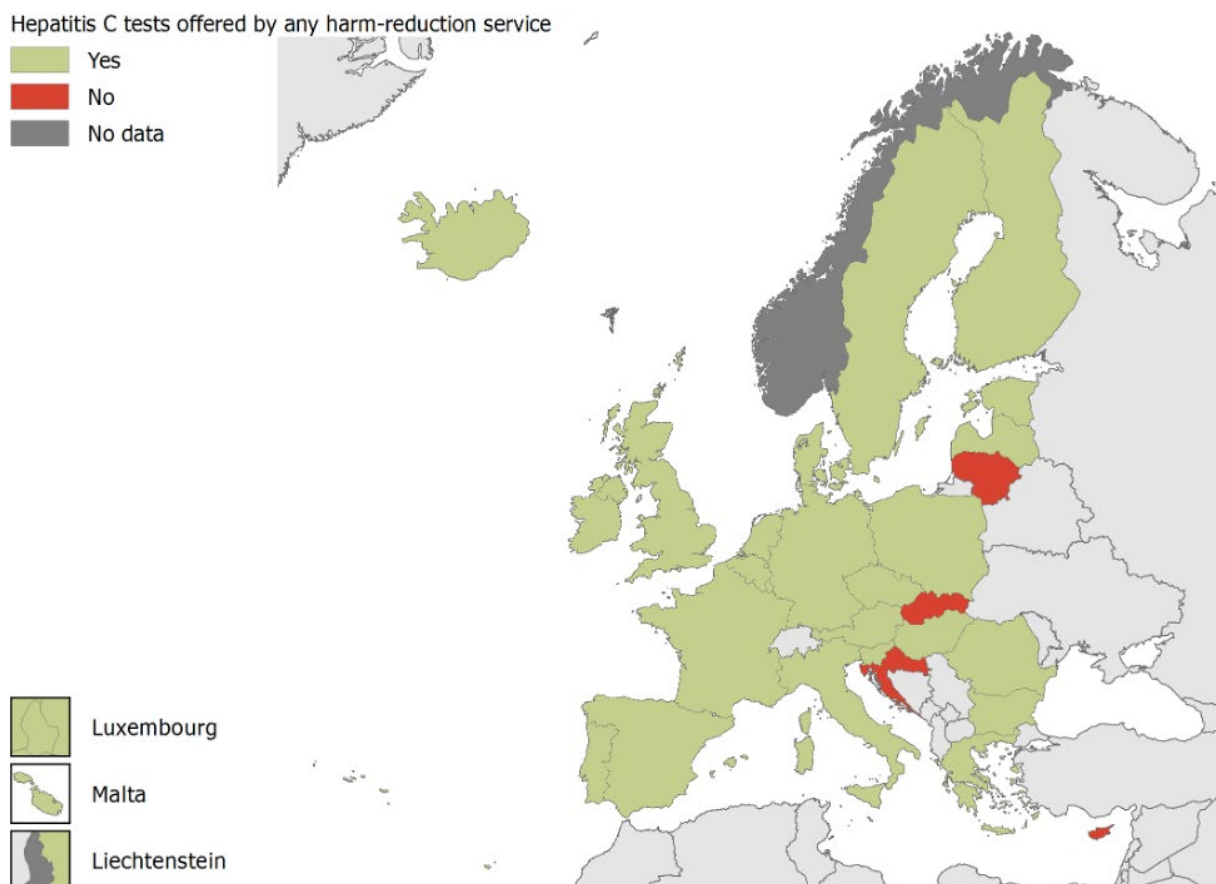
Source: EMCDDA: *Monitoring the elimination of viral hepatitis as a public health threat among people who inject drugs in Europe: the elimination barometer* [10].

A systematic review conducted by ECDC in 2017 on active case finding of communicable diseases in prison settings, reported that there is a strong evidence base that opt-in HBV and HCV tests at prisons show high uptake and high positivity rates [11]. Testing proposed at entry to prison was associated with a higher uptake rate than testing during the course of the stay in prison or testing offered at release. Active case finding strategies resulted in higher uptake and higher case detection than client-initiated testing.

Barriers to testing specific to the prison setting were reported in some studies, and included difficulty in requesting a test, inappropriate times of opportunities for testing, lack of continuity of care in the event of discharge or transfer from prison, and concern about confidentiality and stigma [11].

People who inject drugs/harm reduction services

Thirteen (62%) of the 21 reporting countries had a policy on the testing of HBV/HCV among PWID according to ECDC's 2016-2017 survey [9]. Data collected by the European Joint Action on HIV and Co-infection Prevention and Harm Reduction (HA-REACT) in conjunction with EMCDDA in 2017, through a survey with harm reduction service providers, reported that at least some harm reduction services offered HCV testing to PWID in 25 EU/EEA countries (81%) (Figure 6) [10].

Figure 6. HCV tests offered in harm reduction settings in the EU/EEA, 2017

Source: EMCDDA: *Monitoring the elimination of viral hepatitis as a public health threat among people who inject drugs in Europe: the elimination barometer* [10].

In addition, EMCDDA collected data on the proportion of PWID currently injecting and entering treatment who reported having had an HCV test in the last year [10]. Of the 16 countries reporting data, only five (31%; Austria, Bulgaria, Czechia, Luxembourg, and Spain) reported that over 50% of them had been tested in the last year. There are several barriers to testing that are specific to PWID, including venous access and fear that drawing blood will damage veins, experience of intersecting stigma and discrimination around injection drug use and infectious diseases associated with injecting drugs, and low levels of access to testing in accessible settings and with peer service providers [6].

Migrants

Migrants from countries where HBV is of intermediate or high prevalence ($\geq 2\%$), including areas in Africa and Asia, are estimated to account for 25% of all HBV infections in the EU/EEA [12]. Migrants also bear a disproportionately large burden of HCV in many EU/EEA countries [13]. ECDC's 2016-2017 survey reported that seven countries (33%) had a national policy on testing of HBV and six countries (29%) had a national policy on testing of HCV among migrants [9]. A systematic review from 2018 showed high uptake of HBV screening initiatives among migrants, with the highest uptake in programmes involving community partners or receiving the endorsement of local groups [14, 15]. For patients with a migration background, there may be cultural, linguistic, and socio-economic barriers to testing, barriers relating to low knowledge and understanding of the healthcare system, and barriers due to a lack of access to free or affordable healthcare [16, 17].

Pregnant women

Prevention of the vertical transmission of HBV from mother to child is an important component of a strategy to eliminate hepatitis B, as transmission at birth is very likely to lead to chronic HBV infection in the child. Aside from HBV vaccination at birth, the screening of pregnant women for HBV in the first trimester of pregnancy and subsequent management of any women (and their infants) found to be infected is a strategy to prevent vertical transmission [18]. Universal antenatal screening programmes were reported to be in place in all of the 27 EU/EEA countries that responded to the survey. Data on coverage of the programmes were available from five countries in 2017. Of the five countries, four had achieved the WHO European action plan target for 2020 of having 90% coverage of universal HBV screening programmes for pregnant women.

The 2016-2017 ECDC survey reported that six countries (22%) had a national policy on testing of HCV among pregnant women, reflecting low prevalence of HCV in pregnant women in general populations and low risk of vertical transmission [4, 9].

Workers in healthcare settings

Healthcare workers are at risk for occupational exposure to a variety of blood-borne viruses via needlestick and sharp injuries and contamination of mucous membranes. Less than 2% of acute and chronic HBV and HCV cases can be attributed to occupational exposure of healthcare workers [3, 4], and risks are managed through HBV vaccination programmes and universal safety precautions in healthcare settings. The 2016-2017 ECDC survey reported that 12 countries (57%) had a national policy on testing of HBV, and 10 countries (48%) had a national policy on testing of HCV among healthcare workers [9].

People living with HIV

HIV, HBV, and HCV have common modes of transmission, resulting in large overlaps in the key populations affected and high levels of co-infection [5]. Co-infection with HIV is particularly an issue in PWID and MSM in the EU/EEA, with a recent systematic review reporting that HIV-HCV co-infection ranged from 15.1% in Sweden to 95.2% in Italy among PWID, and from 3.0% in Italy to 13.3% in Germany among MSM [2, 19].

While the European AIDS Clinical Society and the European Association for the Study of the Liver endorse the strategy that individuals diagnosed with one of the infections also be tested for the others, it is likely that implementation of co-infection testing is sub-optimal [20]. This misses a key opportunity to improve diagnosis in patients already engaged with health services and to advance a more patient-centred model of care. The 2016-2017 ECDC survey reported that 15 countries (71%) had a national policy on testing of HBV and 16 countries (76%) had a national policy on testing of HCV among people living with HIV [9]. The 2018 ECDC guidance on testing for blood-borne virus infections lays out a strategy for integrated testing for HIV, HBV, and HCV, identifying core principles, settings, populations, sampling methods, and key considerations to guide implementation [5].

Conclusions

Improving testing and diagnosis of HBV and HCV in the EU/EEA is urgently needed in order to put the region on track to make progress towards SDG targets and the WHO targets and to eliminate hepatitis as a threat to public health. Among countries reporting data, a high proportion of people living with hepatitis infections were undiagnosed in 2017, with estimates suggesting that around one fifth of those with chronic HBV and just over one quarter of those with chronic HCV have been diagnosed. Large gaps in reported data on the proportion diagnosed indicate that improving monitoring and reporting of data on HBV and HCV diagnosis is a key priority in understanding the epidemiological situation and better informing the implementation of hepatitis services in countries.

Reducing the proportion undiagnosed is a key priority for meeting WHO European Region testing targets and for making progress towards the elimination of HBV and HCV in general. It is especially important to address barriers to testing in key populations like PWIDs, people in prisons, the homeless, migrants, and MSM. Having testing policies that are inclusive of these groups and reducing other barriers to testing at the individual, legal, and structural levels will lead to earlier diagnosis. To improve health outcomes and reduce onward transmission, better linkage care should be ensured.

Available data on hepatitis testing policies and routine testing in prisons and harm reduction settings show that improvements to testing policy are needed and there are missed opportunities to scale up testing in these key settings which have high prevalence of HBV and HCV. Improving HBV and HCV testing for people living with HIV is an important part of the strategy for groups with higher levels of co-infection, like PWID and MSM, as individuals may already be linked to HIV care and engaged in health services.

Priority areas for action

- Significant gaps in HBV and HCV testing data in the EU/EEA present a major challenge to monitoring progress towards the WHO and Sustainable Development Goals targets for elimination of hepatitis as a threat to public health. In order to guide national responses to hepatitis B and C, there is a need for countries to prioritise **improving the collection and reporting of high-quality hepatitis testing data**.
- Although much of the existing hepatitis testing data have limitations, available data indicate that the EU/EEA is far from achieving the 2020 target set by the WHO Regional Office for Europe. A high proportion of people living with hepatitis B and C infections appear to remain undiagnosed. There is a need for countries to **urgently prioritise the improvement of testing offering and coverage, especially for key populations affected by HBV and HCV**.
- Evidence of coinfection of HBV and HCV among people living with HIV across the region underlines the importance of adopting an **integrated approach to testing in key populations**, especially MSM and PWID. Collection of data on the extent of coinfections among PWID should be conducted.
- There is a need for countries to work to **address barriers to hepatitis testing** at all levels, such as improving policies to include testing guidance for key populations.

- There is some evidence of sub-optimal implementation of hepatitis B and C testing in harm reduction settings for PWID. **There is a need to scale up testing services in harm reduction and other community-based settings accessed by PWID.**
- **There is a need to improve screening of people in prison settings,** as testing is suboptimal and there is high prevalence among people in prison, as well as a large overlap with the PWID population.

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Annex

Table A. Proportion diagnosed among those living with chronic infections in general populations in EU/EEA countries, 2017

	HBV	HCV
Country	% diagnosed	% diagnosed
	<i>WHO interim target: 50%</i>	
Austria	No data	35.3
Belgium	No data	No data
Bulgaria	2.4	4.1
Croatia	No data	24.8
Cyprus	No data	No data
Czechia	No data	No data
Denmark	71.8	44.3
Estonia	11.0	29.1
Finland	No data	No data
France	17.5	80.6
Germany	No data	No data
Greece	35.0	20.0
Hungary	No data	25.9
Iceland	No data	77.2
Ireland	57.1	63.4
Italy	No data	No data
Latvia	24.0	96.8
Liechtenstein	No data	No data
Lithuania	No data	No data
Luxembourg	No data	No data
Malta	No data	No data
Netherlands	51.5	No data
Norway	No data	No data
Poland	47.3	24.9
Portugal	No data	No data
Romania	7.1	7.6
Slovakia	14.6	92.7
Slovenia	No data	No data
Spain	No data	No data
Sweden	No data	No data
United Kingdom	59.3	53.5

Source: Monitoring the responses to hepatitis B and C epidemics in the EU/EEA Member States, 2019 [2].