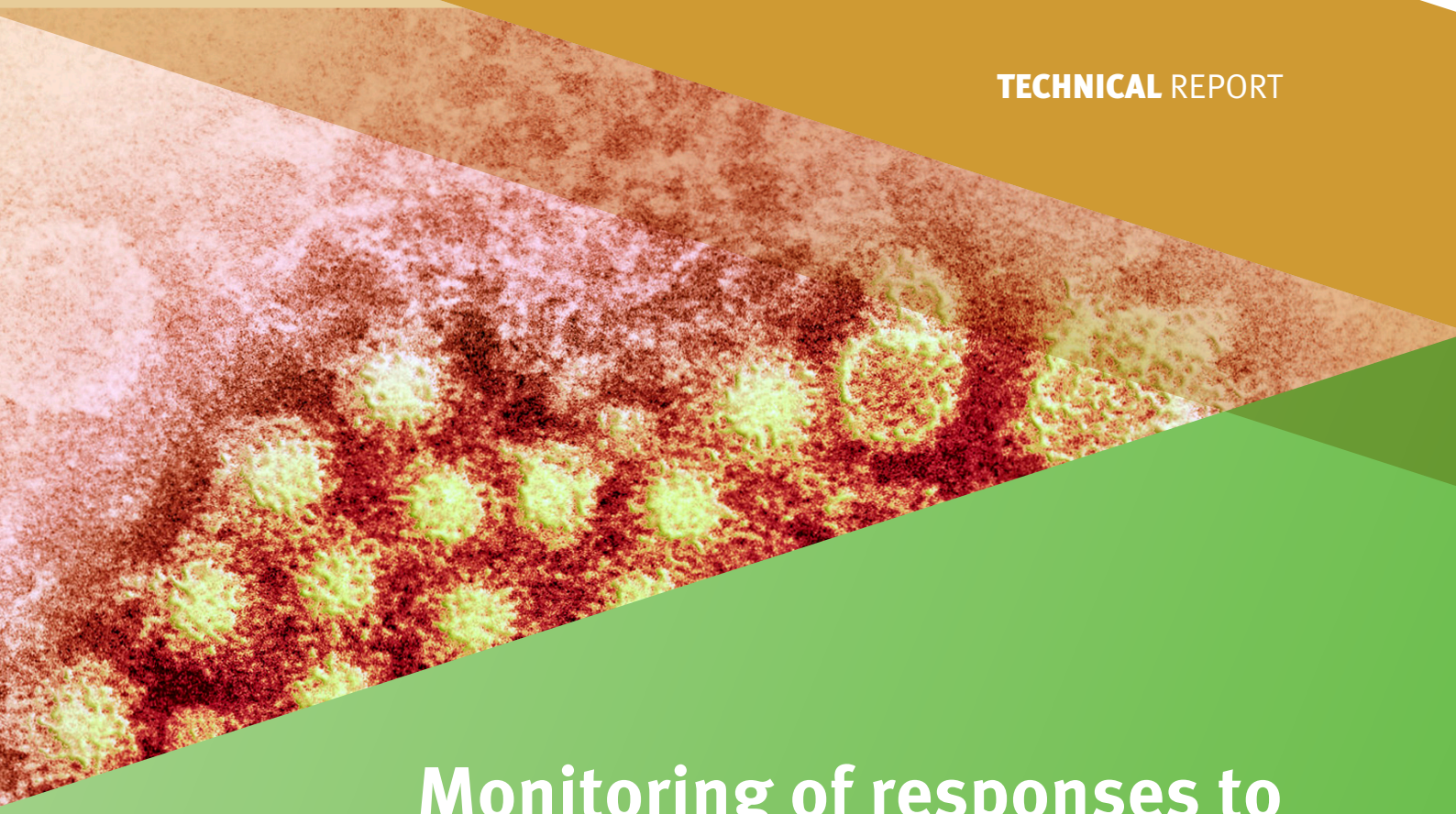
ecdc
EUROPEAN CENTRE FOR DISEASE PREVENTION AND CONTROL

TECHNICAL REPORT



Monitoring of responses to the hepatitis B and C epidemics in EU/EEA countries – 2020 data

www.ecdc.europa.eu

ECDC TECHNICAL REPORT

Monitoring of responses to the hepatitis B and C epidemics in EU/EEA countries – 2020 data

This report was produced by Katherine Sharrock (National AIDS Trust), Erika Duffell (European Centre for Disease Prevention and Control) and Katherine Turpie (National AIDS Trust).

Acknowledgements
The authors would like to thank the following individuals for their invaluable input in providing data and in reviewing the document.

Austria: Ziad El-Khatib, Irene Kászoni-Rückerl, Sigrid Kiermayr, Anna Nagel; Maria Paulke-Korinek, Elise Schabus, Irrene Schmuttere, Margit Winterleitner

Belgium: Benoit Kabamba, Sofieke Klamer, Els Plettinckx, Vanessa Suin, Dominique van Beckhoven, Thomas Vanwolleghem

Bulgaria: Mariya Tyufekchieva, Tonka Varleva

Croatia: Maja Ilic, Tatjana Nemeth-Blažić, Adriana Vince

Cyprus: Fani Theophanous

Czechia: Jitka Cástková, Vratislav,Nemecek

Denmark: Peer Brehm Christensen, Susan Cowan, Martine Grosos Aabye, Anne Øvrehus

Estonia: Jevgenia Epštein, Kristi Rüütel

Finland: Henrikki Brummer, Kirsi Liitsola, Henna Rautiainen, Päivi Viitanen

France: Cécile Brouard, Mathias Bruyand, Florcence Lot, Joisane Pillonel

Germany: Sandra Dudavera, Gyde Steffen, Ruth Zimmermann

Greece: Stergios Georgoulas, Georgia Nikolopoulou, George Papatheodoridis, Ioanna Samiou, Panagiota Touloumi, Sois Zoutsos

Hungary: Agnes Danielisz, Maria Dudas, Emese Kozma, Zsuzsanna Molnár

Iceland: Guðrún Aspelund, Már Kristjánsson

Ireland: Jeff Connell, Suzanne Cotter, Cillian De Gascun, Joanne Moran, Aiden McCormick, Niamh Murphy, Aisling O'Leary, Mary O'Riordan

Italy: Loreta Kondili, Francesco Maraglino, Barbara Suligoi, Maria Elena Tosti, Sabrina Valle

Latvia: Inga Ažiņa, Raina Nikiforova, Serges Nikisins

Liechtenstein: Silvia Dehler, Esther Walser-Domjan

Lithuania: Brigita Kairiene

Luxembourg: Carole Devaux

Malta: Jackie Melillo, Tanya Melill

The Netherlands: Silke David, Jaap Maas, Annemarie Meiberg, Eline Op de Coul, Marleen van Dijk, Irene Veldhuijzen

Norway: Hilde Kløvstad

Poland: Robert Flisiak, Małgorzata Stępień, Karolina Zakrzewska

Portugal: Joana Bettencourt, Rui Tato Marinho, Sofia Ribeiro

Romania: Odette Popovici, Corina Silvia Pop

Slovakia: Mária Avdicová

Slovenia: Marta Grgič-Vitek, Jože Hren, Irena Klavs, Janja Križman Miklavčič, Eva Leban, Mojca Matičič, Mario Poljak, Urška Rahne Potokar

Spain: Agustín Albillos, Maria Buti, Javier Crespo, Julia del Amo, Asunción Diaz, José Luis Calleja, Javier García-Samaniego, Victoria Hernando, Oriana Ramírez-Rubio, Pablo Ryan

Sweden: Soo Aleman, Maria Axelsson, Hanna Edberg, Josefine Lundberg Ederth, Martin Kåberg

ECDC: Emilia Lindquist, Teymur Noori

European Monitoring Centre for Drugs and Drug Addiction: Thomas Seyler

WHO Regional Office for Europe: Giorgi Kuchukhidze, Antons Mozalevskis

Erratum: Figure 6 was initially mistakenly accompanied by an additional chart. This was deleted on 27 February 2023.

Suggested citation: European Centre for Disease Prevention and Control. Monitoring of responses to the hepatitis B and C epidemics in EU/EEA countries – 2020 data. Stockholm: ECDC; 2022.

Stockholm, June 2022

ISBN 978-92-9498-574-3
doi: 10.2900/245108
Catalogue number TQ-09-22-253-EN-N

Contents

Figures

Tables

Abbreviations

CLD	Chronic liver disease
CVH	Chronic viral hepatitis
COVID-19	Coronavirus disease 2019
EAP	European Action Plan
EASL	European Association for the Study of the Liver
EEA	European Economic Area
EU	European Union
GHSS	Global Health Sector Strategy
HBV	Hepatitis B virus
HBsAg	Hepatitis B surface antigen
HCC	Hepatocellular carcinoma
HCV	Hepatitis C virus
HDV	Hepatitis D virus
HIV	Human immunodeficiency virus
MSM	Men who have sex with men
NFP	National Focal Point
SARS-CoV-2	Severe acute respiratory syndrome coronavirus 2
SDGs	Sustainable Development Goals
UN	United Nations
WHO	World Health Organization

Executive summary

Beginning in 2016, the European Centre for Disease Prevention and Control (ECDC) developed a monitoring system for hepatitis B and C in the EU/EEA that is aligned with the indicators and targets of the Global Health Sector Strategy (GHSS) and the WHO European Region Action Plan. The primary aims of the system are to support EU/EEA countries in monitoring their responses to the epidemics of hepatitis B and C in a standardised, high-quality manner and to analyse these data and disseminate reports that can guide the European Commission, WHO and other European agencies and organisations to support countries in achieving their goal of hepatitis elimination. An additional aim of the system is to minimise reporting burden by using existing data from other sources where possible.

The first data collection effort for this monitoring system occurred in 2017 and 2018. The second round of data collection took place in 2021, with the aim of collecting standardised, high-quality data that reflected the hepatitis B and C epidemics in 2020 (or the most recent year with available data), aligned with the WHO European Region Action Plan targets for 2020. Six of the 26 European Union/European Economic Area (EU/EEA) countries responding to the 2021 monitoring survey reported no action plan or strategy for viral hepatitis prevention and control. Of the 19 countries which reported a national plan/strategy, only 11 reported that there was national funding for implementation. Twenty-two countries reported that there was testing guidance for hepatitis B and/or C. However, many countries' guidance did not include one or more of the key populations at risk for hepatitis infections. Three countries reported that not all test costs were reimbursed, nine reported that testing was available in community-based drug service settings and 18 countries reported the existence of policies that require that hepatitis tests be performed by healthcare workers, indicating another policy area that could be revised to allow for improved accessibility of testing. Fourteen of 26 countries reported there were no restrictions on access to treatment for chronic HBV and HCV infection. Of the countries with restrictions on access to treatment, nine identified restrictions for undocumented migrants and three identified restrictions for people who use drugs. Two countries reported that costs for treatment was primarily 'out of pocket'.

Overall, 20 countries provided data for at least one of the four key stages of the hepatitis B continuum of care and 23 countries provided data for at least one of the four key stages for the hepatitis C continuum of care. The number of countries which were able to report data related to the continuum of care for both hepatitis B and C has fallen since 2018 and significant gaps in data completeness and robustness remain. Data was collected on WHO-defined indicators as well as newly proposed continuum of care indicators.

The estimated number of people living with chronic HBV infection by country varied 18-fold from 183 to 3 312 per 100 000 population. However, these estimates were derived from a range of methods of varying quality and were often based on studies from before 2016. The estimated number of people living with current chronic HCV infection by country ranged 100-fold from 24 to 2 411 per 100 000 population. These estimates were also sourced from a range of methods and most estimates were from 2018 or earlier.

For hepatitis B, it was not possible to assess progress towards the 2020 WHO European Region Action Plan targets for most of the targets due to lack of data. For the 2020 diagnosis target, four of eight countries reporting relevant data had met the 50% target and in terms of viral suppression two countries had met the target of 90% of those on treatment being virally suppressed.

For hepatitis C, data availability along the continuum of care was generally greater compared to hepatitis B but it is still difficult to assess region-wide progress. Four of seven countries reporting relevant data achieved the 50% diagnosed target. The best progress was seen in the HCV sustained virologic response (SVR) target, with ten of the eleven countries reporting data exceeding the 90% target for those achieving SVR of those treated with antiviral medications.

The COVID-19 pandemic had wide-reaching impacts on hepatitis services in the EU/EEA region. It has negatively impacted some hepatitis B and C prevention and testing services. Most countries reported negative impacts of the pandemic on clinic visits for routine care, testing for HBV and HCV, and/or the provision of community-based services. Additionally, 46% of countries reported that there was reduced laboratory capacity for hepatitis B/C testing. However, some routine hepatitis B prevention services, such as routine antenatal screening, were not largely affected by the pandemic. Six countries reported that routine infant/childhood hepatitis B vaccination was negatively affected.

The COVID-19 pandemic did not appear to have a large impact on hepatitis B and C treatment and governmental funding for hepatitis programmes. The pandemic prompted some countries to implement new and innovative strategies, such as virtual appointments and alternative modes of medication delivery.

1. Background

Context

Chronic infection with hepatitis B virus (HBV) and hepatitis C virus (HCV) is a major cause of chronic liver disease, cirrhosis and hepatocellular carcinoma. It was estimated in 2017 that 4.7 million people were living with chronic HBV infection and 3.9 million people were living with chronic HCV infection in the European Union (EU) and European Economic Area (EEA) [1]. In the EU/EEA, deaths attributed to HBV and HCV are estimated to account for around 55% of liver cancer deaths and 45% of all deaths due to cirrhosis and other chronic liver disease [2]. While incidence of HBV and HCV infections has declined across Europe due to effective HBV vaccination programmes and a range of other prevention strategies, modelling has suggested that associated morbidity and mortality could increase if responses are not scaled up [3,4]. Hepatitis B and C are epidemiologically complex diseases that affect a wide variety of key populations, have varying modes of transmission, are largely asymptomatic and have low awareness among healthcare providers and patient populations [5]. Given these characteristics, reducing hepatitis infections and associated morbidity and mortality requires a strong multi-disciplinary approach, informed by robust data collected from comprehensive and sustainable monitoring systems.

The United Nations member states adopted the Sustainable Development Goals (SDGs) for 2030 in 2015, including goal 3, to promote health and wellbeing, and target 3.3: 'End the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, waterborne and other communicable diseases' [6]. The adoption of the SDGs put the control of viral hepatitis on the global public health agenda. The EU/EEA is committed to implementing the 2030 Agenda for Sustainable Development and the SDGs, as well as monitoring progress towards these goals in EU/EEA countries.

The World Health Assembly endorsed the first Global Health Sector Strategy (GHSS) for viral hepatitis in 2016, with the goal of eliminating viral hepatitis as a major threat to public health by 2030 in alignment with the SDGs [7]. The concept of elimination for these infections is based on the global targets set by the World Health Organization (WHO) for reducing the incidence of chronic infections by 90% and the attributable mortality by 65% by 2030. The first action plan for the health sector response to viral hepatitis in the WHO European Region, published in 2017, adapts the GHSS for the context of the countries of the WHO European Region, taking epidemiological, political and social factors into account [8]. The European Action Plan specifies service and impact targets for the WHO European Region, some of which are more ambitious than the global targets, in recognition of the existing prevention and control efforts in the Region and the capacity of existing systems to have further impact on progress against the epidemics.

Beginning in 2016, the European Centre for Disease Prevention and Control (ECDC) developed a monitoring system for hepatitis B and C in the EU/EEA that is aligned with the indicators and targets of the GHSS and the WHO European Region Action Plan. The primary aims of the system are to support EU/EEA countries in monitoring their responses to the epidemics of hepatitis B and C in a standardised, high-quality manner and to analyse these data and disseminate reports that can guide the European Commission, WHO and other European agencies and organisations to support countries in achieving their goal of hepatitis elimination. An additional aim of the system is to minimise reporting burden by using existing data from other sources where possible.

The first data collection effort for this monitoring system occurred in 2017 and 2018, and led to multiple outputs, including the technical report *Monitoring the responses to hepatitis B and C epidemics in EU/EEA Member States, 2019* [9].

Aims and objectives

The second round of data collection using the EU/EEA hepatitis B and C monitoring system took place in 2021, with the aim of collecting standardised, high-quality data that reflected the hepatitis B and C epidemics in 2020 (or the most recent year with available data), aligned with the WHO European Region Action Plan targets for 2020 (see Box 1).

Box 1. Action plan targets for hepatitis elimination in the WHO European Region, 2020

Diagnosis

- 50% of all persons with chronic hepatitis B virus (HBV), hepatitis C virus (HCV) and hepatitis D virus (HDV) are diagnosed
- 75% of the estimated number of patients at a late stage of viral hepatitis-related liver disease (cirrhosis or hepatocellular carcinoma (HCC)) are diagnosed

Linkage to care and treatment

- Treatment for chronic HBV, HCV and HDV infection, in line with international standards, is available and affordable for all
- 90% of diagnosed patients with chronic HBV, HCV and HDV infections are linked to care and adequately monitored
- 75% of the diagnosed patients with chronic HBV and HDV infection, who are eligible for treatment, begin treatment
- 75% of the diagnosed eligible patients with chronic HCV infection receive effective treatment

Viral suppression and cure (sustained viral response)

- 75% of the diagnosed patients with chronic HBV and HDV infection, who are eligible for treatment, begin treatment and, among those on long-term treatment for HBV, 90% obtain viral suppression
- 75% of the diagnosed eligible patients with chronic HCV infection receive effective treatment and at least 90% of them are cured

Source: WHO Regional Office for Europe [8]

The objectives of this report are to:

- Describe and interpret the data collected in 2021 on the hepatitis B and C continua of care (number of chronic infections, number of individuals diagnosed, number of individuals receiving treatment and treatment outcomes), policy related to testing and treatment, and the impact of the COVID-19 pandemic on hepatitis services;
- Describe progress in the EU/EEA towards the WHO European Region 2020 interim Action Plan targets for hepatitis elimination; and
- Discuss the reporting capacity of EU/EEA countries and methodological issues with the data, and identify priority areas for future action for monitoring and services for the elimination of hepatitis B and C in the EU/EEA.

2. Methods

Data collection from EU/EEA countries

Beginning in 2017, indicators and potential existing sources of data were mapped and gaps in available data were identified. The monitoring questionnaire, with standardised indicators, was developed by ECDC in consultation with an expert advisory group to address gaps in data. The online questionnaire was built and administered by ECDC, and was distributed to in-country hepatitis experts, called National Focal Points (NFPs).

The questionnaire was revised for the 2021 data collection following consultation with the expert advisory group. The questionnaire sections on hepatitis policy and prevention, and the continua of care, were expanded. Sections were added for the key populations people who inject drugs and people in prison, as well as for the impact of the COVID-19 pandemic on hepatitis services. The 2021 tool was built using Snap Survey Software, pilot tested by three countries revised, and then distributed to all NFPs online. NFPs were asked to provide national data for 2020, when possible. However, data from before 2020 or from subnational geographic regions were accepted when national data for 2020 were not available. Data collection took place from May to September 2021 and data were validated in October 2021. Subsequent notifications of corrections were used to update the reported data.

There were some additional changes to the data collection process in 2021. Data for the number of individuals with chronic HBV and HCV infections, diagnosed, tested and treated, as well as treatment outcomes, were pre-populated into the online questionnaire before it was distributed, where possible (i.e. when the 2017 indicator definition matched the 2020 indicator definition). Countries were asked to update the 2017 figures if newer data were available. However, this was not possible for the newly defined indicators that were included in the second data collection round but not the first. Additionally, while the United Kingdom (UK) was included in the first round of data collection, it was not included in the 2021 data collection, as the UK left the EU on 31 January 2020.

In the 2021 questionnaire, there was a focus on updating and refining some indicators along the hepatitis B and C continua of care. While data were still collected in line with the WHO continuum of care indicator definitions, additional data were collected for the updated indicators following close consultation with the expert advisory group. The WHO indicators and the updated indicators are identified throughout the results section. The updated indicators were collected with the intention of providing more context on the progress that has been made along the patient pathway and to address the limitations of the WHO indicators, as identified by the ECDC team and the expert advisory group. The main analyses conducted on the monitoring data were a summary of the data at national and EU/EEA levels, an assessment of the progress towards the European Region Action Plan targets and a summary of the updated indicators developed to supplement the WHO monitoring framework.

The analyses in this report focused on national policy related to hepatitis testing and treatment, national data on the continua of care and national data on the impact of the COVID-19 pandemic on hepatitis services in the EU/EEA. Monitoring data on other topics, primarily hepatitis B and C prevention, were also collected in the 2021 monitoring questionnaire and newer data from other sources were also collated for 2021. These data are not presented in this report.

3. Results

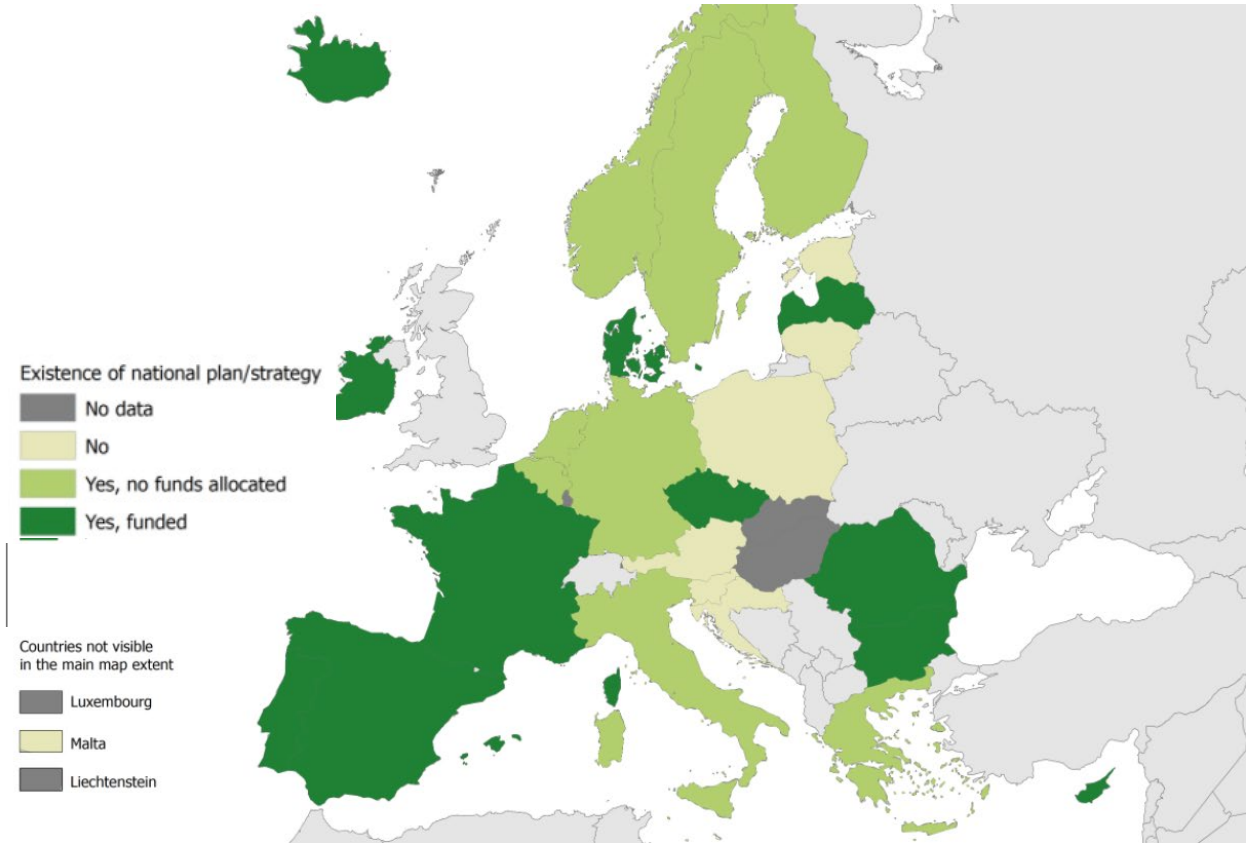
Of the 30 countries in the EU/EEA, 26 countries responded to the monitoring questionnaire in 2021. Three countries (Hungary, Luxembourg and Slovakia) were in contact with the monitoring team but were not able to submit data. Liechtenstein did not submit data, as the country's data are reported to Switzerland.

Policy on testing and treatment for hepatitis B and C

Hepatitis response plan or strategy

Countries were asked whether a national plan or strategy existed that covered the response to viral hepatitis. Of the 26 responding countries, 19 (73.1%) reported that there was a plan or strategy and 11 reported that there were funds allocated from the national budget to implement the plan or strategy (Figure 1).

Figure 1. Existence of a national plan or strategy that covers the response to viral hepatitis and funding to implement the plan/strategy, in the EU/EEA, 2021

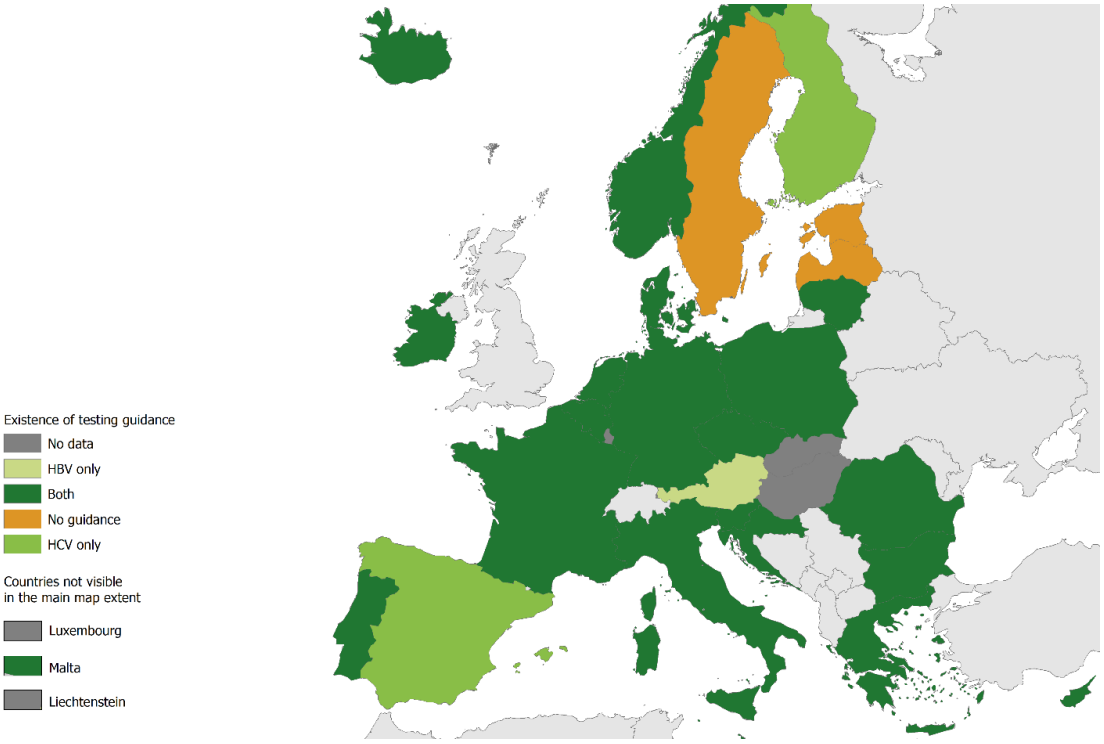


In Slovenia, hepatitis prevention and control is integrated in different national strategies and guidelines for experts.

Policy related to HBV and HCV testing

Countries were asked whether they have testing guidance covering HBV and HCV. Of the 26 responding countries, 21 reported that they had testing guidance covering HBV and 22 reported that they had testing guidance covering HCV (Figure 2). Three countries reported that they did not have any guidance.

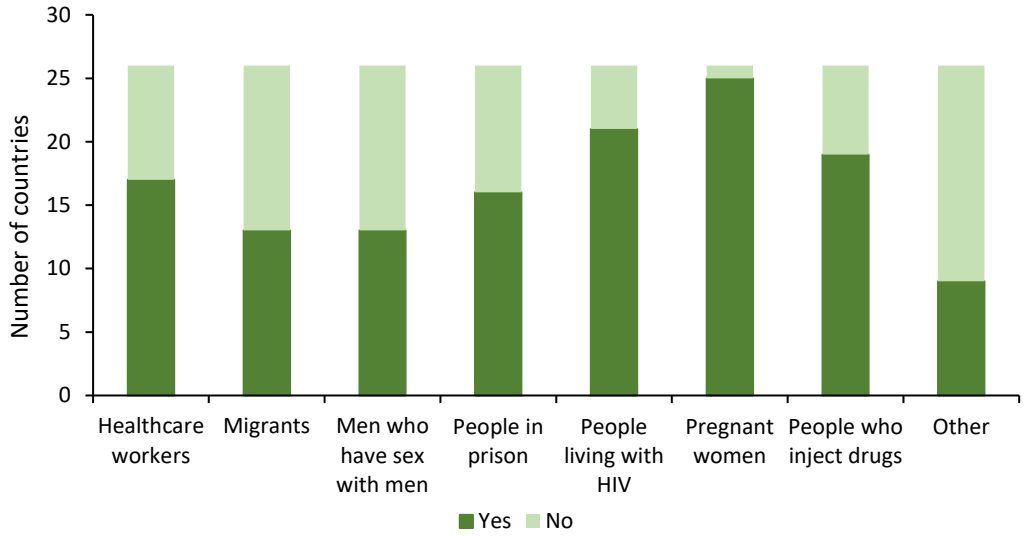
Figure 2. Existence of general* national testing guidance for HBV and HCV, in the EU/EEA, 2021



** Several countries reported specific testing guidance for key risk groups.*

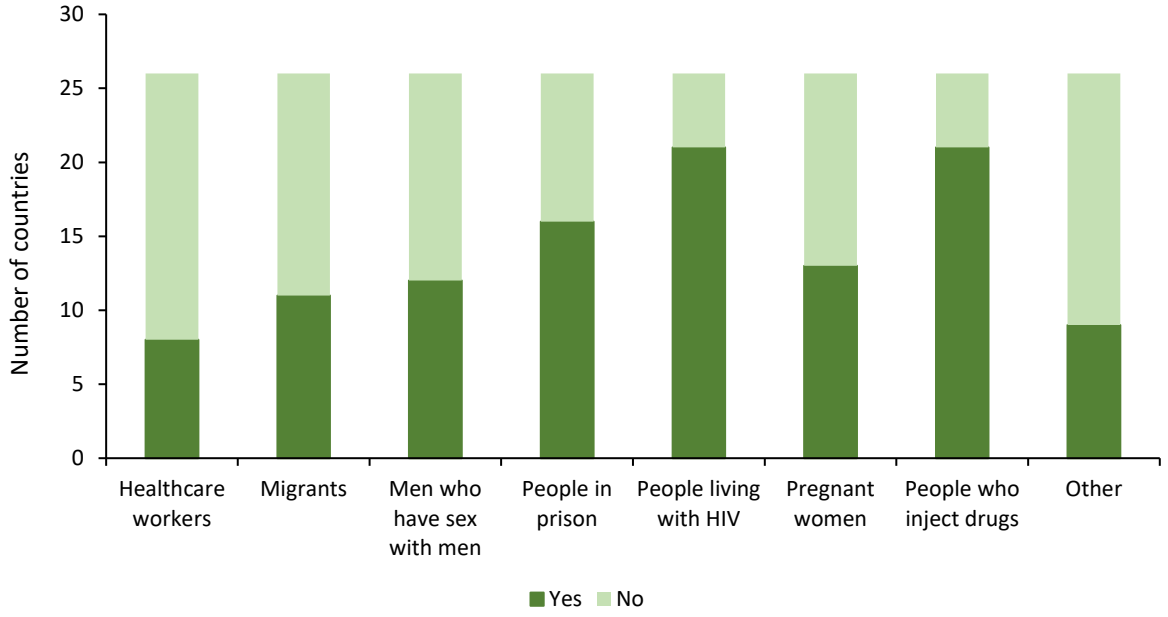
Countries were asked whether they have a policy or programme for HBV testing for a list of key populations (Figure 3). Of the 26 responding countries, 25 reported that they had a policy or programme for HBV testing for pregnant women, making this the most frequently reported group. Migrants and men who have sex with men were the least frequently reported groups, with 13 countries each. Under the category of 'Other', countries reported that there were policies or programmes for HBV testing for: patients with haematological malignancies, autoimmune diseases, liver disease, renal disease and tuberculosis; who were on chronic dialysis or immunocompromised; or who were sex workers, applying for refugee status or aged older than 40 years.

Figure 3. Existence of an HBV testing policy or programme for key populations, 2021



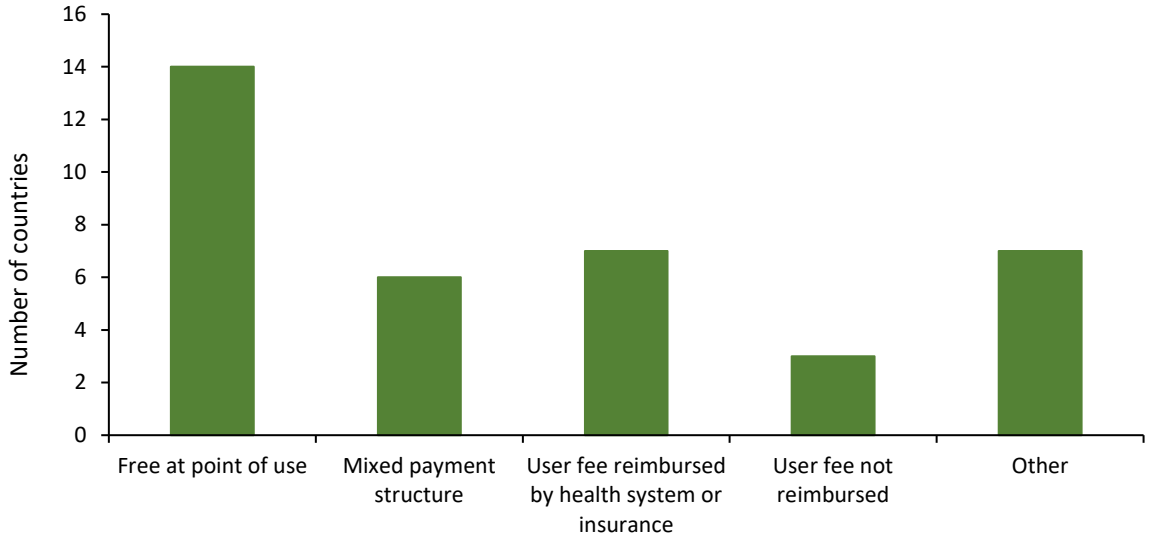
Countries were also asked whether they have a policy or programme for HCV testing for a list of key populations (Figure 4). Of the 26 responding countries, 21 reported that they had policies or programmes for HCV testing for people who inject drugs and people living with HIV (PLHIV), making these the most frequently reported groups. Healthcare workers were the least frequently reported group, with eight countries. Under the category of 'Other', countries reported that there were policies or programmes for HCV testing for: patients undergoing in-vitro fertilisation, with liver disease, with renal disease or on chronic dialysis, as well as those who were immunosuppressed, applying for refugee status, aged older than 40 years or born between 1945 and 1980.

Figure 4. Existence of an HCV testing policy or programme for key populations, 2021



Countries were asked how costs of HBV and HCV testing were covered for the individual. Fourteen countries reported that testing is free at the point of use, with other cost-covering mechanisms reported less frequently (Figure 5).

Figure 5. Coverage of HBV/HCV testing costs by the individual, 2021



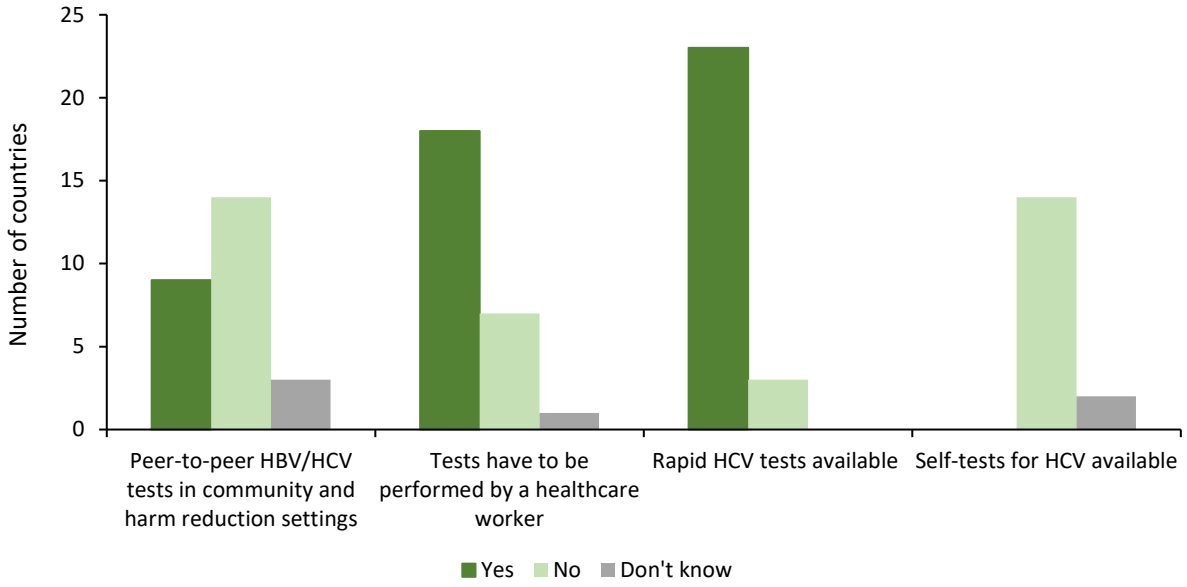
Respondents were able to choose more than one option.

Additional testing-related policy questions were asked, including:

- Are peer-to-peer testing services for HBV/HCV implemented in harm reduction and/or community settings?
- Is there a policy that any type of HBV/HCV test has to be performed by a healthcare worker?
- Are rapid tests for HCV available in your country?
- Are self-tests for HCV available in your country?

The responses to these questions are displayed in Figure 6. Nine countries reported that peer-to-peer testing was available in community and harm reduction settings. Eighteen countries reported that there was a policy that tests must be performed by a healthcare worker. Rapid HCV tests were reported to be available in 23 countries, while no countries reported that HCV self-tests were available.

Figure 6. Additional HBV and HCV testing-related policy questions, 2021



Policy related to HBV and HCV treatment

Of 26 responding countries, 14 reported that there were no restrictions on access to HBV/HCV treatment (Figure 7). For the 11 countries that reported restrictions on access to treatment, the populations with restricted access are listed in Table 1.

Figure 7. Existence of restrictions on access to HBV/HCV treatment, in the EU/EEA, 2021

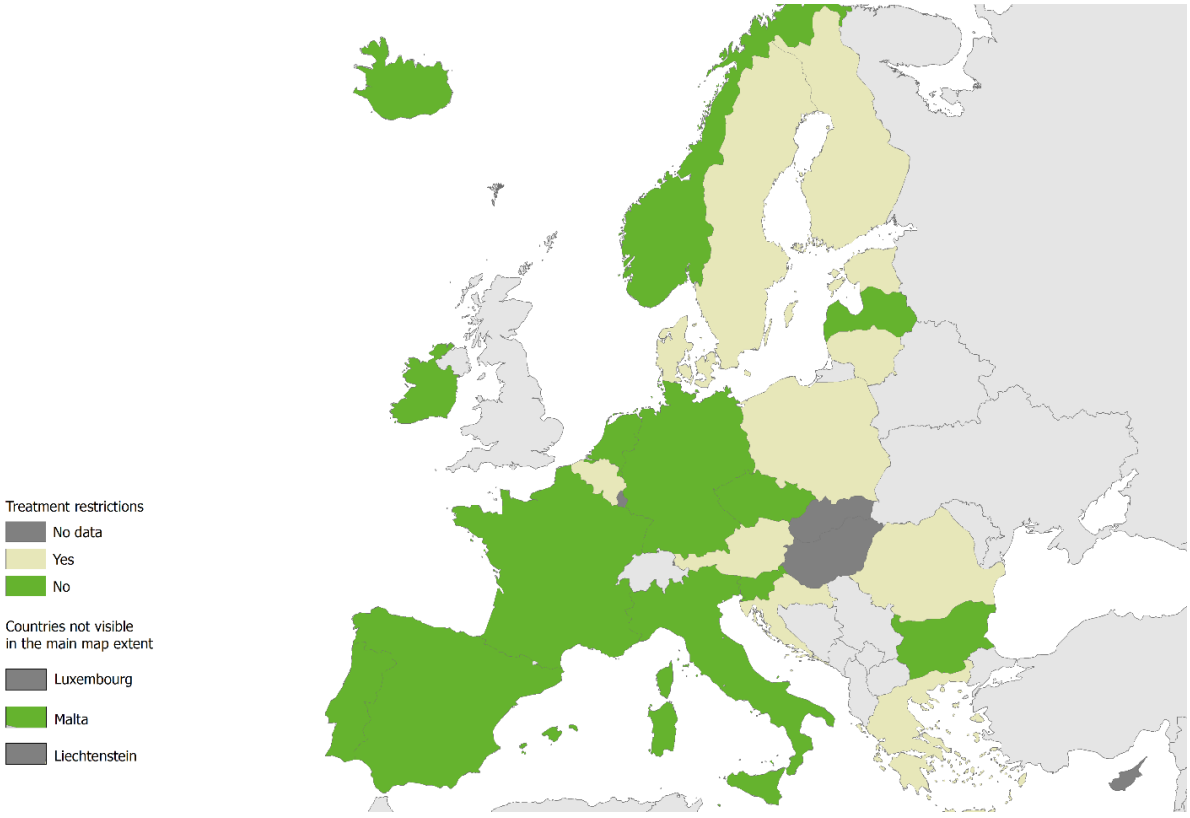
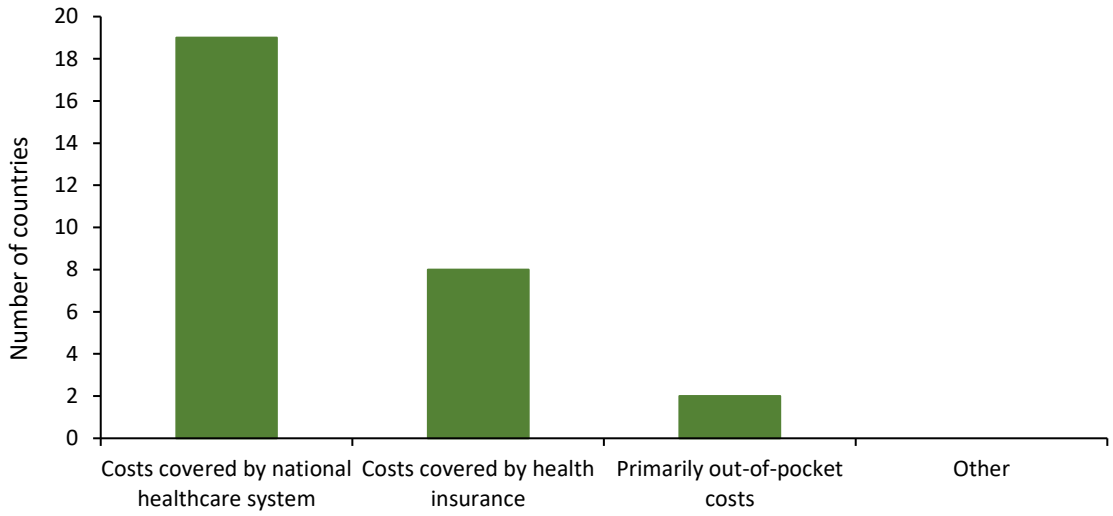


Table 1. Types of HBV/HCV treatment restrictions, by country, 2020

Country	Type of HBV/HCV treatment restrictions
Austria	Undocumented migrants
Belgium	Undocumented migrants (treatment available only if considered urgent medical care)
Croatia	Undocumented migrants People who inject drugs (current injectors)
Denmark	Undocumented migrants
Estonia	Other (unspecified)
Finland	Undocumented migrants
Greece	Undocumented migrants
Lithuania	Undocumented migrants
Poland	People who inject drugs (current injectors) People with active alcohol dependence
Romania	Undocumented migrants People who inject drugs (current injectors) People who inject drugs (former injectors) For patients accessing treatment through national health insurance, treatment is restricted to those in F1-F4 stages of fibrosis
Sweden	Undocumented migrants (restricted to treatment that cannot be postponed for medical reasons)

Countries were asked how the costs of HBV/HCV treatment are covered. Costs were reported to primarily be covered by national healthcare systems, with 19 countries reporting this option (Figure 8).

Figure 8. Coverage of HBV/HCV treatment costs in the EU/EEA, 2021



Respondents were able to choose more than one option.

The continuum of care for hepatitis B

Background on the HBV continuum of care

The continuum of care for hepatitis B is a conceptual framework of the sequential stages of services along the patient pathway: from number living with chronic infection to diagnosis, linkage to care, treatment and treatment outcome. This framework allows for monitoring of the effectiveness of the response to these epidemics in a geographic region or population. The continuum provides a snapshot of important stages in achieving viral suppression for those living with chronic HBV infection. Achieving a high rate of viral suppression for chronic HBV infection plays a major role in reducing the impact of hepatitis B, resulting in reduced morbidity and mortality and a lower incidence of new infections from decreased transmission.

In the HIV field, the continuum (or cascade) of care has been used to identify where gaps in services need to be addressed to ensure patients living with HIV receive the care needed to lead to viral suppression. It has served as the basis for the global HIV control targets, known as the '90-90-90' targets (90% of people living with HIV diagnosed, 90% of people diagnosed on treatment, and 90% of people on treatment with viral suppression). These targets were introduced by the Joint United Nations Program on HIV/AIDS (UNAIDS) in 2014 [10].

In the viral hepatitis field, the GHSS and WHO European Region Action Plan have also created targets that align with the major stages of the hepatitis continuum of care. For chronic HBV infection, the WHO European Region Action Plan targets for 2020 are listed in Box 2.

Box 2. WHO European Region Action Plan targets for hepatitis B, 2020

Diagnosis

- 50% of all persons with chronic HBV are diagnosed

Linkage to care and treatment

- 90% of diagnosed patients with chronic HBV infections are linked to care and adequately monitored
- 75% of diagnosed patients with chronic HBV infection eligible for treatment begin treatment

Viral suppression

- 90% of those on long-term treatment for HBV obtain viral suppression

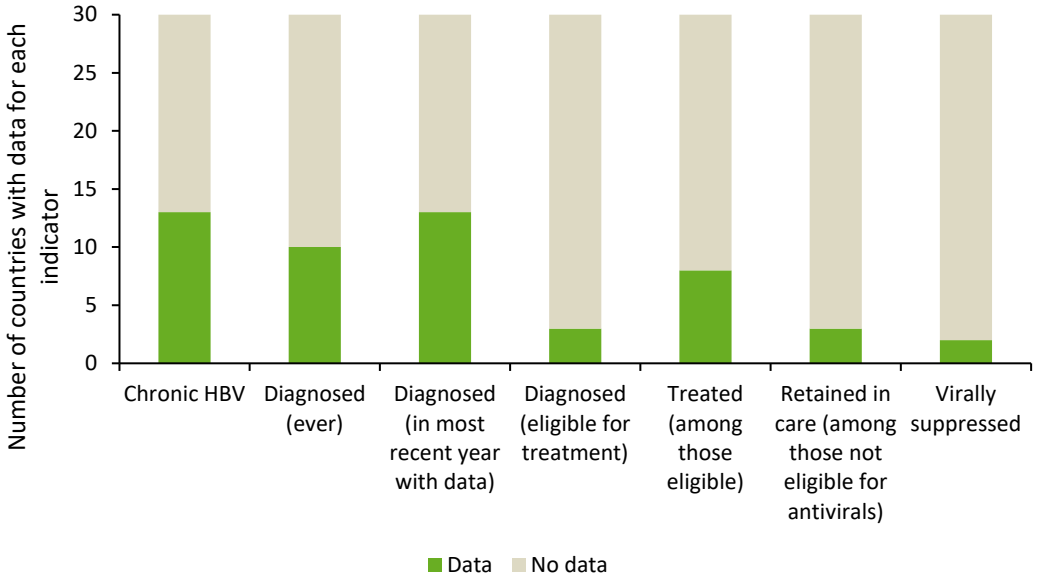
Source: WHO Regional Office for Europe [8]

Data availability for hepatitis B

The monitoring questionnaire asked countries to report data on the stages of the continuum of care for indicators aligned with the WHO European Region Action Plan targets, as well as for supplemental indicators that were refined and updated to capture additional relevant information along the continuum (see Methods).

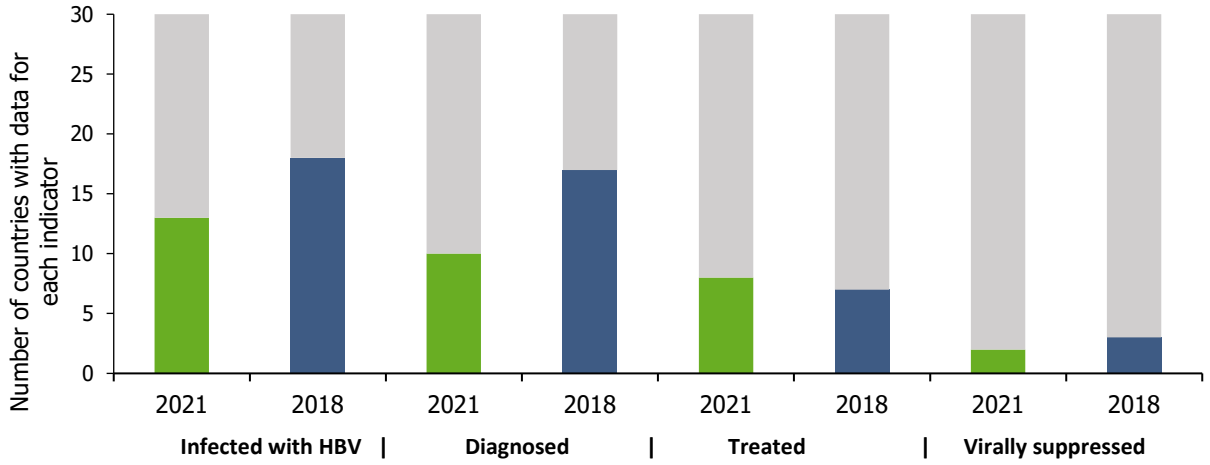
Of the 30 EU/EEA countries, 26 countries submitted responses to the questionnaire. Overall, 20 countries could provide national data for at least one stage of the continuum for hepatitis B (Figure 9).

Figure 9. Number of EU/EEA countries reporting data for the hepatitis B continuum of care indicators, 2021 monitoring questionnaire



Compared with the first reporting round in 2018, fewer countries were able to report data during the second reporting round in 2021 (Figure 10). This is especially true for the number of people with chronic HBV infection (18 reporting countries decreased to 13) and the number of people diagnosed (17 reporting countries decreased to 10).

Figure 10. Number of EU/EEA countries reporting data for hepatitis B continuum of care indicators, 2018 compared with 2021

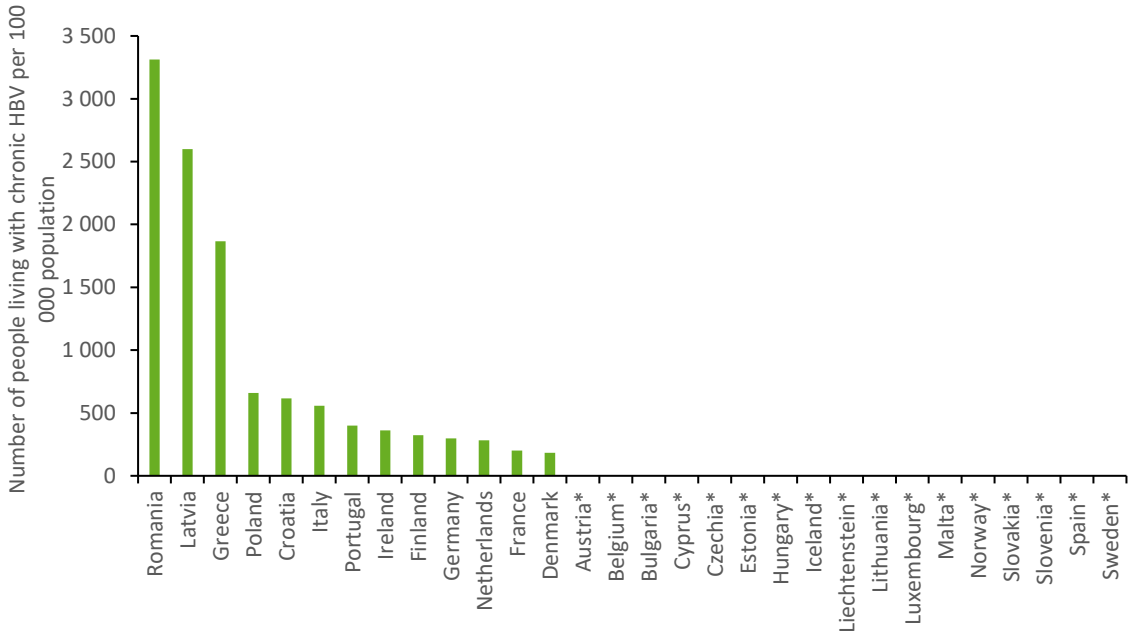


Estimated number of people living with chronic HBV infection

In total, 13 countries provided data on the estimated number of people living with chronic HBV infection (defined as being HBsAg positive), diagnosed and undiagnosed, by the end of 2020 or the most recent year with national data available (Annex 1). Estimates ranged from 10 668 people in Denmark (based on a modelling study from 2007) to 640 176 people in Romania (based on a seroprevalence study from 2015). Estimates of the number of people infected per 100 000 population varied 18-fold, from 183 to 3 312 per 100 000 population (Figure 11).

Estimates were based on the results of prevalence surveys, modelling studies and other types of studies, some with unpublished data, in the general population. These studies represent a range in quality of data. Estimates also represented a wide variety of years, from 2001 to 2018, although most estimates were from before 2016 (see Annex 1). No country reported subnational data for this indicator.

Figure 11. Estimated number of people living with chronic HBV infection (diagnosed and undiagnosed) per 100 000 population in the EU/EEA, 2020*



** 2020 or most recent year with available data (see Annex 1).*

*** Country did not provide data.*

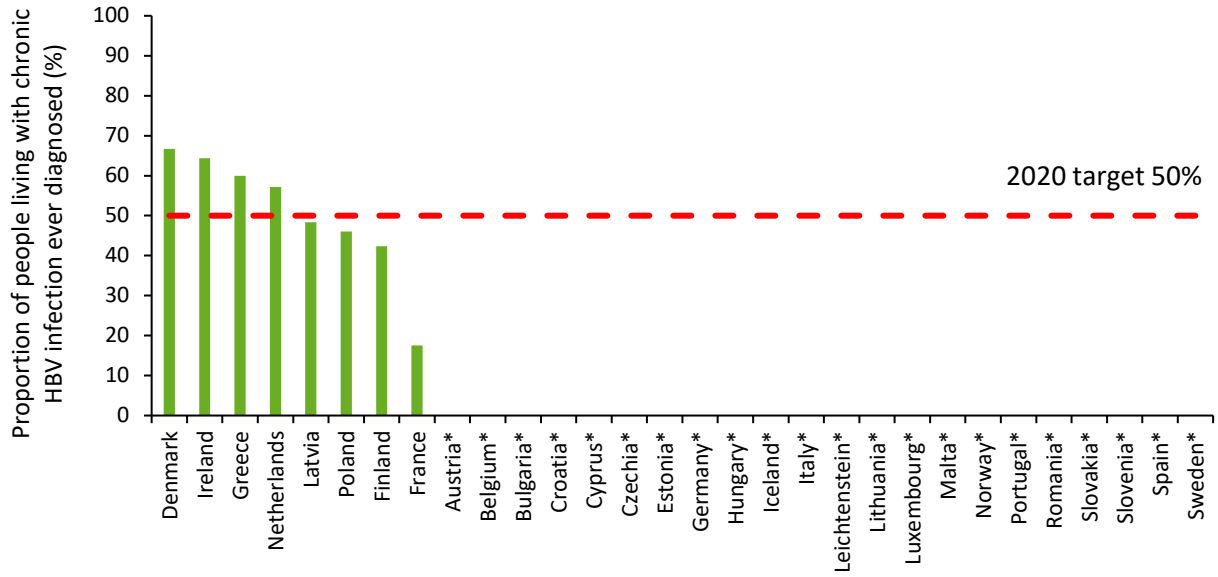
Diagnosis with chronic HBV infection

EU/EEA progress towards 2020 targets

Four of the eight countries that reported data have achieved the 2020 target of having 50% of all people with chronic HBV diagnosed.

Among the eight countries that reported data on both the estimated number of people living with HBV infection and the number of people diagnosed, there were an estimated 730 874 people with chronic HBV infection, of whom 337 023 (46%) were estimated to have been diagnosed. This falls below the target of 50%, but represents an increase from the estimated 20.3% diagnosed in the first reporting round in 2018 (however, fewer countries reported data in 2021 and the countries reporting data differed) [9]. At the national level, the proportion diagnosed ranged from 17.5% in France to 66.7% in Denmark, with four of eight countries achieving the 2020 target of 50% of cases diagnosed (Figure 12).

Figure 12. WHO indicator: Proportion of people living with chronic HBV infection ever diagnosed by the end of 2020[a] in the EU/EEA

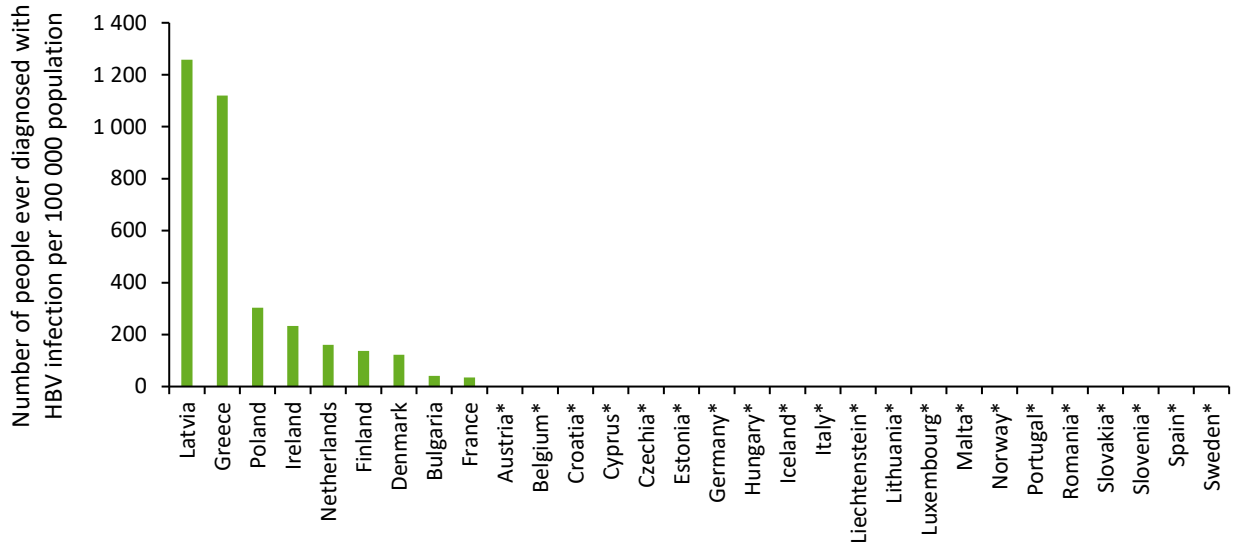


[a] 2020 or most recent year with available data (see Annex 1).
** Country did not provide data.*

The data on the number of people diagnosed (the numerator of the proportion) came from a wide range of sources of varying quality, including modelling, surveillance/notification data, cohort studies and blood transfusion centre data.

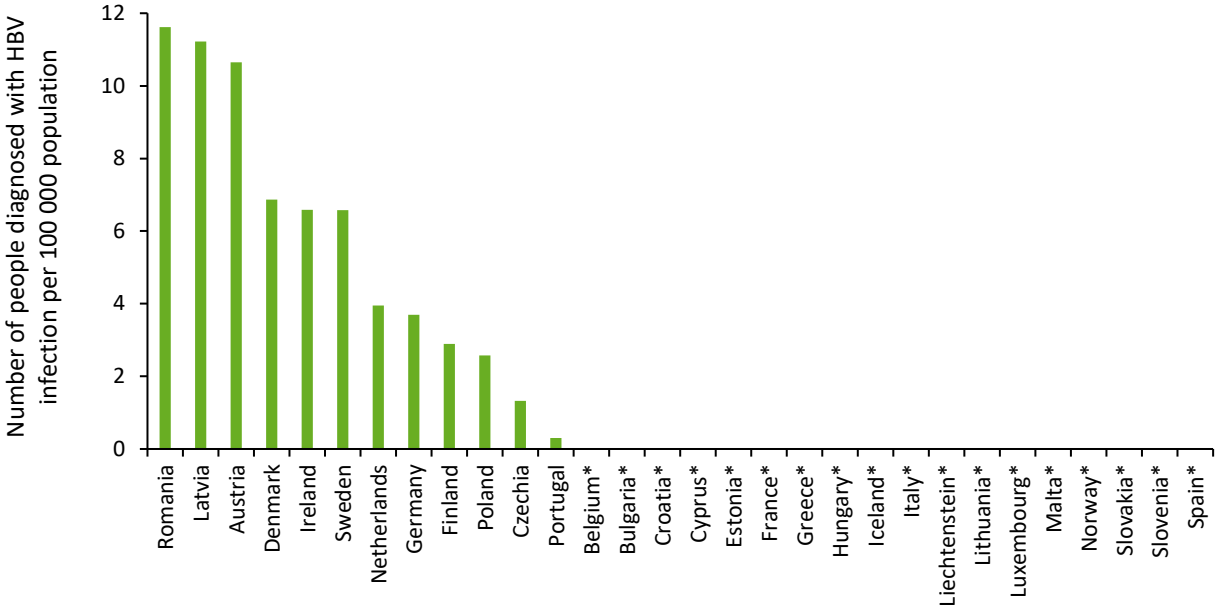
To provide additional context on diagnosis, the number of people ever diagnosed per 100 000 population and the number of people diagnosed in 2020 (or the year with the most recent data) per 100 000 population are presented in Figures 13 and 14. The number of people ever diagnosed and living with chronic HBV infection per 100 000 population ranged from 35.3 in France to 1258.1 in Latvia. The number of people diagnosed with chronic HBV infection per 100 000 population in 2020 ranged from 0.3 in Portugal to 11.6 in Romania.

Figure 13. Number of people ever diagnosed and living with chronic HBV infection per 100 000 population in the EU/EEA, 2020[a]



[a] *2020 or most recent year with available data (see Annex 1).*
** Country did not provide data.*

Figure 14. Number of people diagnosed with chronic HBV infection per 100 000 population in the EU/EEA, 2020[a]



[a] 2020 or most recent year with available data (see Annex 1).

** Country did not provide data.*

Three countries reported estimates on the proportion of individuals with chronic HBV infection who had end-stage liver disease, including decompensated cirrhosis or hepatocellular carcinoma, at the time of diagnosis. Estimates ranged from 1.5-40% of diagnosed cases presenting with end-stage liver disease (Table 2). While eight countries reported estimates for this indicator in the 2018 questionnaire, the indicator definition changed to specify decompensated cirrhosis rather than cirrhosis in 2021, so fewer countries were able to report with the updated indicator definition.

Table 2. Proportion of people with chronic HBV infection who had decompensated cirrhosis or hepatocellular carcinoma at the time of diagnosis in the EU/EEA

Country	Proportion of people with end-stage liver disease at time of diagnosis	Year of data
Germany	6.2-28% cirrhosis; 1.6-9.9% hepatocellular carcinoma	2011-2012
Poland	1.5%	2019
Romania	40%	2019

Diagnosed patients with chronic HBV infection who were linked to care and on treatment

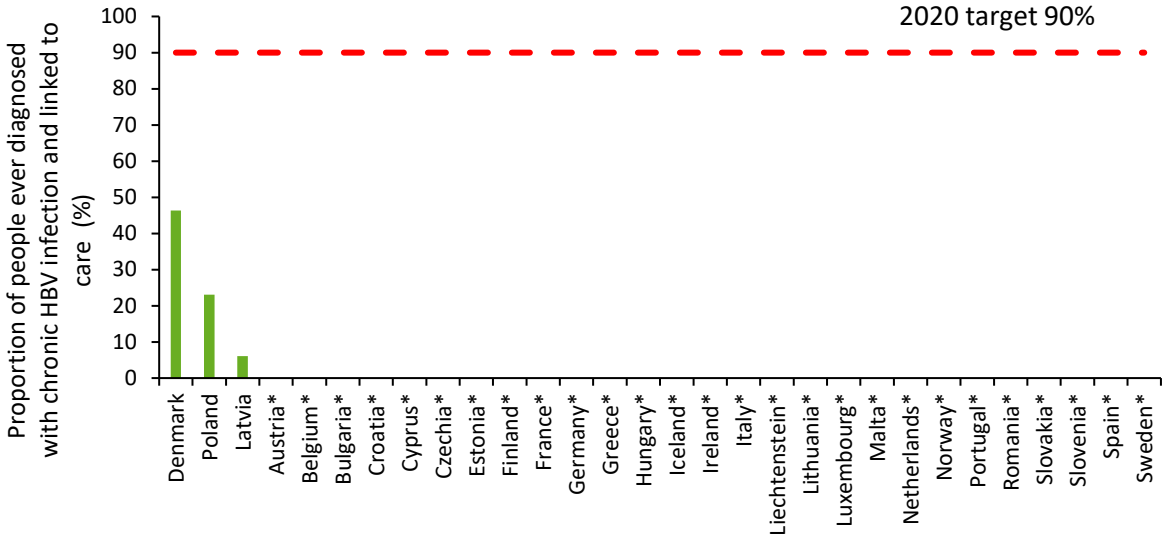
EU/EEA progress towards 2020 targets

None of the three countries with data on the proportion of people with end-stage liver disease at the time of diagnosis achieved the 2020 target of having at least 90% of diagnosed HBV patients linked to care. Romania was the only country that reported national data, allowing for calculation of the proportion of diagnosed patients eligible for treatment who are on treatment. In Romania, this proportion was 11%, falling short of the 75% target.

Linkage to care

Three countries provided national data on the number of people living with chronic HBV infection ever diagnosed and the number of people ever diagnosed who were linked to care in 2020 (or the year with most recent data), which is the WHO monitoring and evaluation indicator[1] [11]. The proportion linked to care ranged from 6.1% in Latvia to 46.3% in Denmark (see Figure 15).

Figure 15. Proportion of people ever diagnosed with chronic HBV infection and linked to care (of those ever diagnosed by the end of 2020), 2020[a] in the EU/EEA



[a] 2020 or most recent year with available data (see Annex 1).
** Country did not provide data.*
Subnational data reported from the west of Denmark (Regions: north, central and south) were scaled up to the national level.

[1] **Indicator A.8**: Numerator (Number of HBV/HCV-infected persons who received care in the past 12 months)/Denominator (Estimated population of persons with chronic HBV/HCV infection) [11].

Proportion of patients retained in care of those who are not eligible for treatment with antivirals

Countries were asked to report the number of patients who were diagnosed with chronic HBV infection and were eligible for treatment with antivirals based on clinical guidelines from the European Association of the Study of the Liver (EASL). This figure was used to calculate how many diagnosed patients were not eligible for treatment with antivirals in order to derive the proportion of those not eligible for treatment who were retained in care (defined as receiving specialist or follow-up care) by the end of 2020 or the most recent year with data. This is not a WHO indicator, but is intended to monitor progress among those with chronic HBV infection who are not eligible for treatment with antivirals. One issue identified during data collection was that there was insufficient data on treatment eligibility for all diagnosed cases, so any calculation based on the collected data would not be accurate. Therefore, the proportion of those retained in care, diagnosed and not eligible for treatment could not be calculated for any country.

Proportion of patients on treatment with antivirals of those who have been diagnosed and are eligible for treatment

Three countries reported the number of patients who were diagnosed with chronic HBV infection and were eligible for treatment based on EASL criteria. Six countries (Belgium, German, the Netherlands, Poland, Romania and Slovenia) reported the number of patients who were ever diagnosed with chronic HBV infection, were eligible for treatment and were receiving antiviral treatment at the national level. Two countries reported data on both figures (Romania and Slovenia). However, Slovenia determined that the calculation could not be performed with the reported data, as the treatment eligibility of all patients who were ever diagnosed was not known. Romania reported that 11% of those eligible for treatment were receiving treatment.

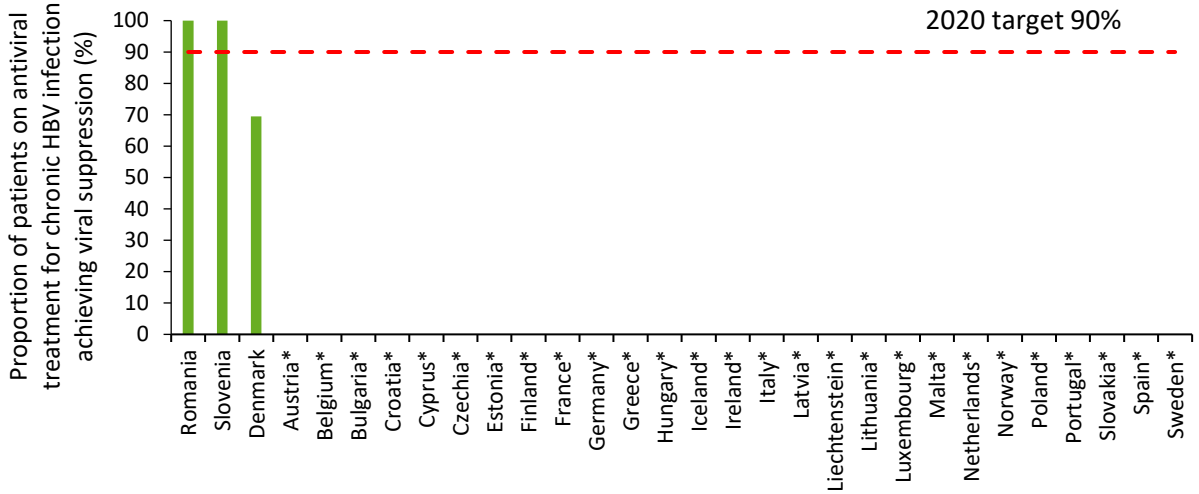
Viral suppression among patients on treatment for chronic HBV

EU/EEA progress towards 2020 targets

Three countries reported data on the number of patients with chronic HBV infection who were receiving treatment and the number of patients with viral suppression. Two countries (Romania and Slovenia) met and exceeded the 90% target of proportion with viral suppression.

Three countries reported sufficient data for the number of patients receiving antiviral treatment and the number of patients with viral suppression in 2020. For this WHO indicator, both Romania and Slovenia reported achieving 100% viral suppression, exceeding the 2020 target (Figure 16).

Figure 16. Proportion of patients on antiviral treatment for chronic HBV infection achieving viral suppression, with documented treatment outcome, 2020 in the EU/EEA



** Country did not provide data in monitoring survey.*
Subnational data from the west of Denmark (Regions: north, central and south) were scaled up to the national level.

The continuum of care for hepatitis C

Background on the HCV continuum of care

As with hepatitis B, the continuum of care provides a framework of important stages in achieving sustained virologic response for those living with chronic HCV infection. Achieving a high rate of sustained virologic response for chronic HCV infection is a critical aspect of reducing the impact of hepatitis C, resulting in reduced morbidity and mortality and a lower incidence of new infections. The WHO European Region Action Plan targets for 2020 that align with the major stages of the hepatitis C continuum of care are listed in Box 3.

Box 3. WHO European Region Action Plan targets for hepatitis C, 2020

Diagnosis

- 50% of all persons with chronic HCV are diagnosed

Linkage to care and treatment

- 90% of diagnosed patients with chronic HCV infections are linked to care and adequately monitored
- 75% of diagnosed patients with chronic HCV receive effective treatment

Viral suppression

- 90% of those on effective treatment for chronic HCV infection are cured (achieve sustained virologic response)

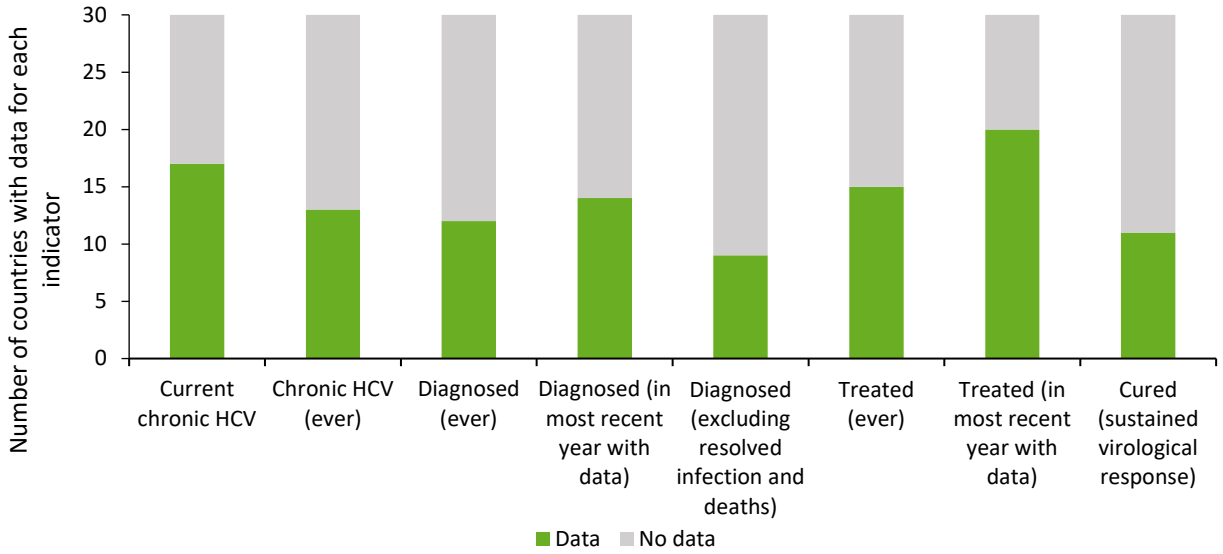
Source: WHO Regional Office for Europe [8]

As for hepatitis B, the monitoring questionnaire asked countries to report data on the stages of the continuum of care for indicators aligned with the WHO European Region Action Plan targets and for additional indicators that have been refined and updated to capture relevant information along the continuum (see Methods). These data on the hepatitis C continuum of care are presented to follow.

Data availability for hepatitis C

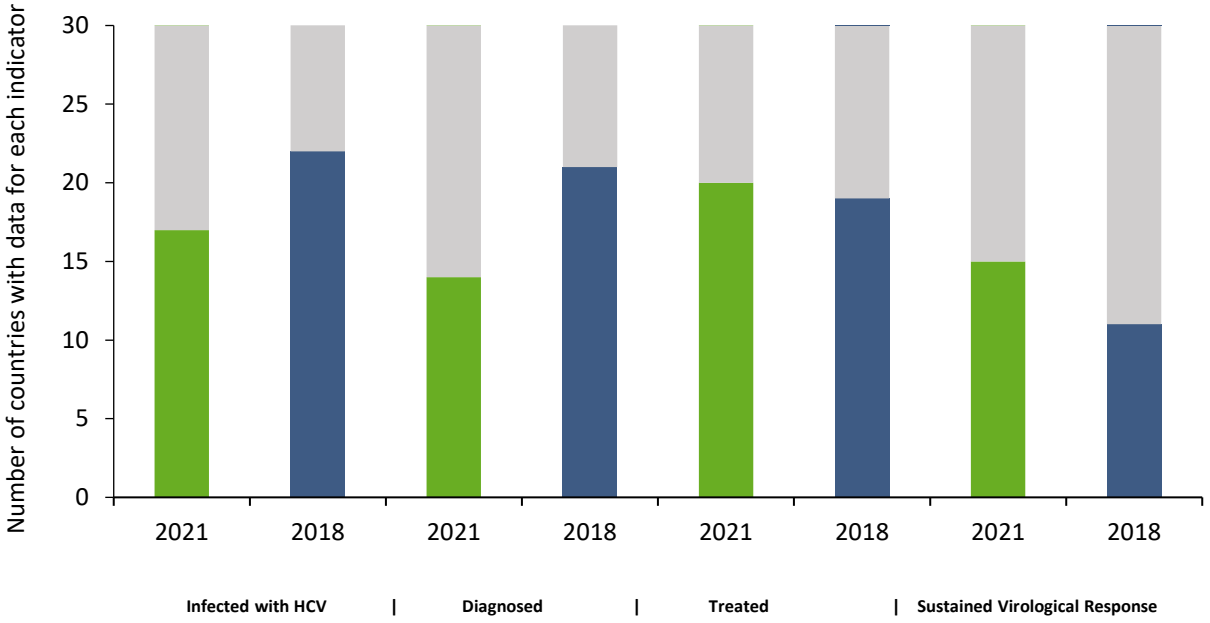
Overall, 23 of the 26 responding countries provided national-level data for at least one stage of the continuum for hepatitis C (Figure 17).

Figure 17. Number of EU/EEA countries reporting data for the hepatitis C continuum of care indicators, 2021 monitoring questionnaire



Fewer countries were able to report data in 2021, compared with the first reporting round in 2018 (Figure 18), especially for the indicators number of people with chronic HCV infection and number of people diagnosed. However, a similar number of countries reported data for the number of patients treated and the number of patients with sustained virologic response in 2018 and 2021.

Figure 18 Number of EU/EEA countries reporting data for the hepatitis C continuum of care indicators, 2018 compared with 2021

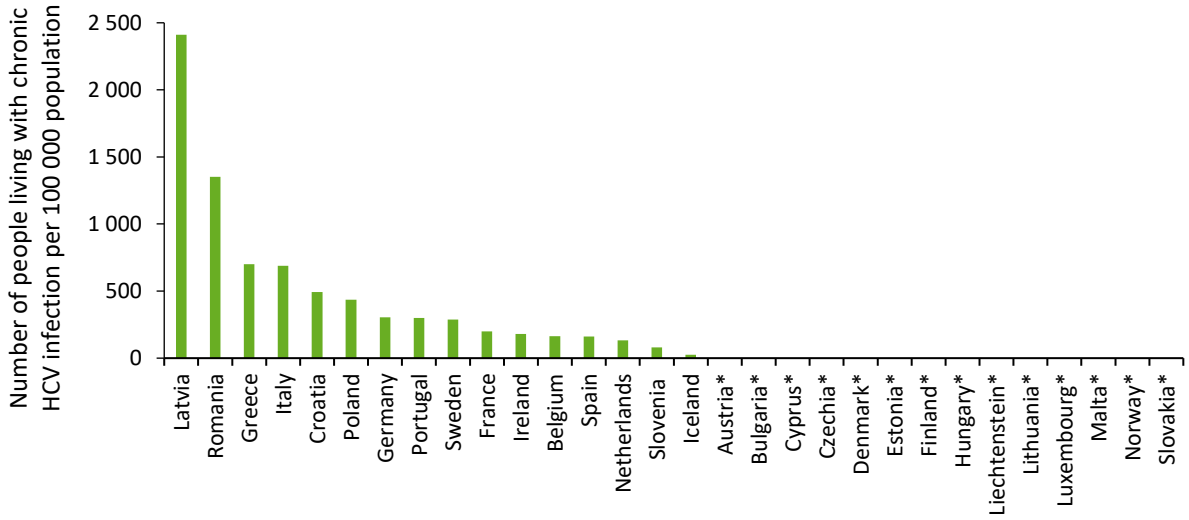


Estimated number of people living with chronic HCV infection

Seventeen countries provided data on the estimated number of people living with chronic HCV infection (RNA positive), diagnosed and undiagnosed, by the end of 2020 or the most recent year with available data (Annex 2). Estimated numbers ranged from 88 people in Iceland (based on a surveillance study from 2020) to 410 775 people in Italy (based on a modelling study from 2019). Estimates were based on the results of seroprevalence surveys, surveillance and

modelling studies in the general population of varying quality. Eight of the estimates reflected data from 2018 and later (see Annex 2 for years of data estimates). Figure 19 presents the estimated number of people living with chronic HCV infection per 100 000 population. Czechia provided subnational data, which were included in Annex 2, but not in any of the figures.

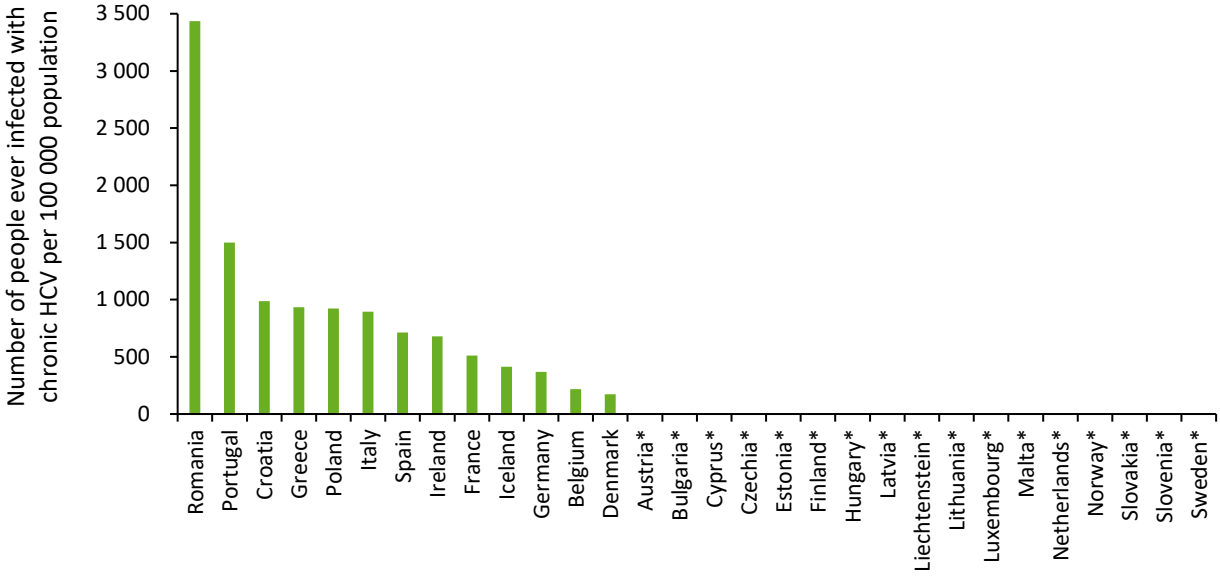
Figure 19. Estimated number of people living with chronic HCV infection (RNA positive) per 100 000 population, in the EU/EEA. 2020[a]



[a] 2020 or most recent year with available data (see Annex 2).
** Country did not provide data.*
Data for Poland refer to the adult population only.

Thirteen countries provided data on the estimated number of people ever infected with HCV (anti-HCV positive), diagnosed and undiagnosed, by the end of 2020 or the most recent year with available data (Annex 2). While the number of people living with chronic HCV infection can provide a snapshot of the current burden of disease, reflecting recent progress made on reducing active cases via treatment, the number ever infected can give a historical perspective of the burden of disease in a country. Estimates of the numbers ever infected ranged from 1 501 in Iceland based on surveillance data to 663 981 in Romania based on a nationwide screening programme. Figure 20 presents the estimated number of people ever infected with chronic HCV infection per 100 000 population. All but two of these estimates are from before 2018 (Annex 2).

Figure 20. Estimated number of people ever infected with HCV (anti-HCV positive), diagnosed and undiagnosed, per 100 000 population, in the EU/EEA, by the end of 2020[a]



[a]

2020 or most recent year with available data (see Annex 2).
** Country did not provide data.*

Data for Poland refer to the adult population only.

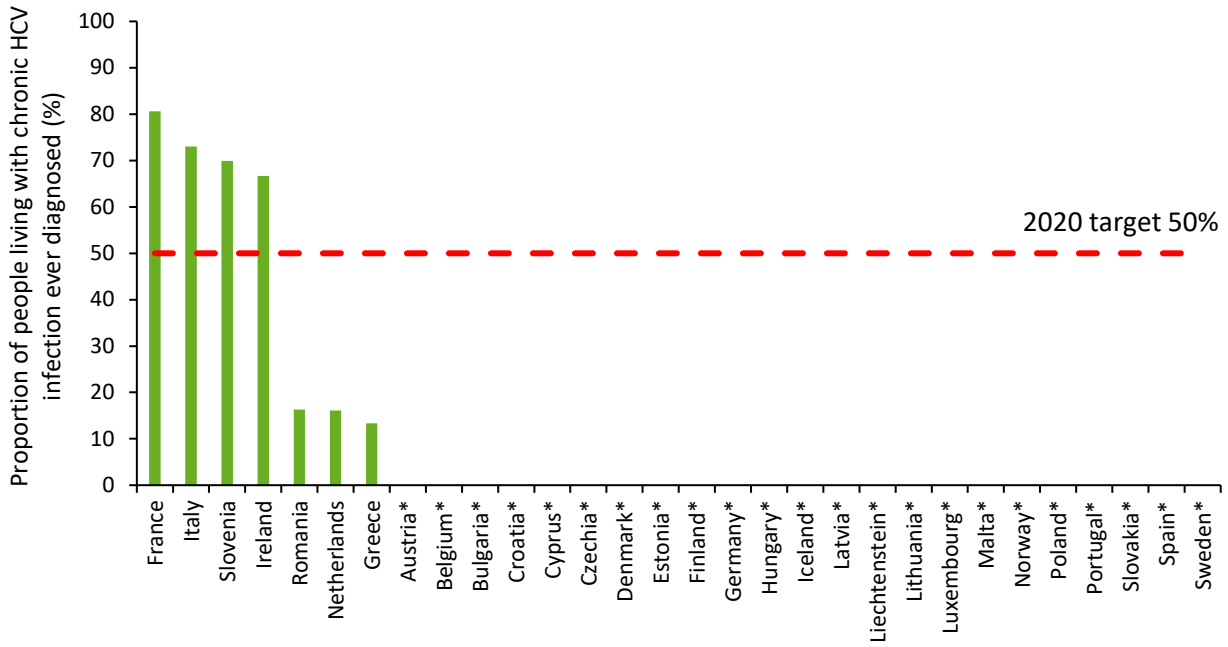
Diagnosis with chronic HCV infection

EU/EEA progress towards 2020 targets

Four of the seven countries reporting data achieved the 2020 target of having 50% of all people living with chronic HCV infection diagnosed.

The proportion of people living with chronic HCV infection who had ever been diagnosed is the WHO indicator for HCV diagnosis. Among the seven countries reporting data on both the estimated number of people living with chronic HCV infection and the number of people ever diagnosed, there were an estimated 914 037 people with chronic HCV infection, of whom 471 006 (52%) were estimated to have been diagnosed. This exceeds the target of 50% and represents an increase from the estimated 26.8% diagnosed in the first round of reporting in 2018; however, fewer countries reported in 2021 [9]. At the country level, the proportion diagnosed ranged from 13.3% in Greece to 80.6% in France, with four of seven countries achieving the 2020 target of 50% of cases diagnosed (Figure 21).

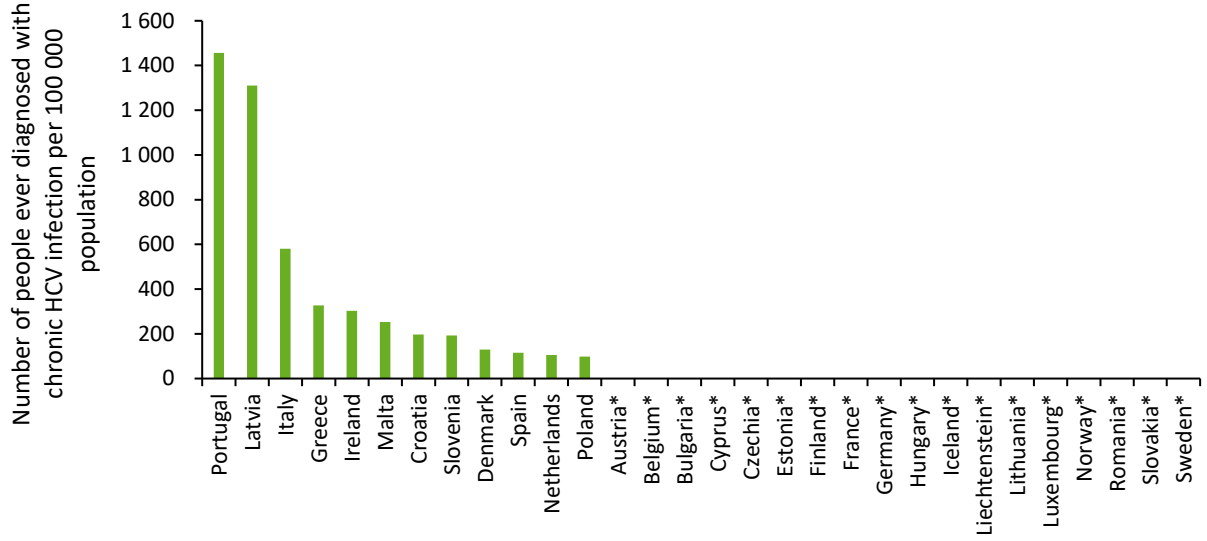
Figure 21. Proportion of people living with chronic HCV infection ever diagnosed, in the EU/EEA, by the end of 2020[a]



[a] *2020 or most recent year with available data (see Annex 2).*
** Country did not provide data.*

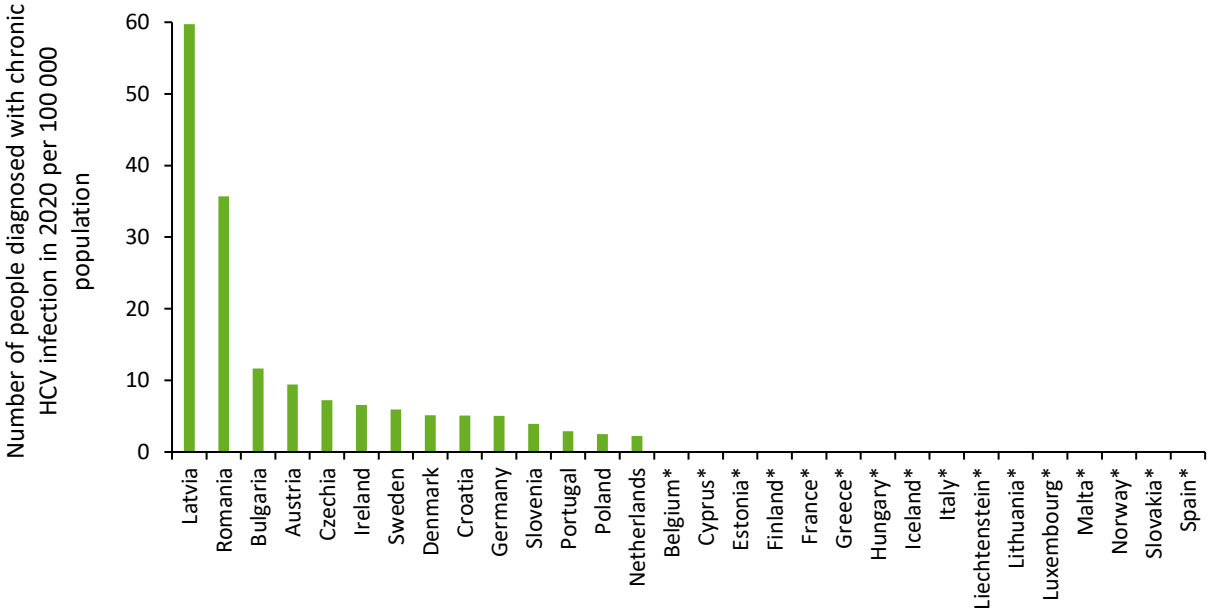
Additional indicators were proposed to monitor country-level progress on diagnosis of chronic HCV infection: the number of people diagnosed during 2020 (or the year with most recent data) and the number of people ever diagnosed with chronic HCV infection by the end of 2020 (or the year with most recent data), excluding those with resolved infection (cured or naturally cleared) and those who had died. Based on the second figure, the number of remaining undiagnosed people was calculated. Data on the number of people diagnosed were provided from a variety of sources, including surveillance, cohort studies, surveys, modelling studies and expert opinions. The data reported for these three indicators are presented in Figures 22 to 24.

Figure 22. Number of people ever diagnosed and living with chronic HCV infection by the end of 2020[a], per 100 000 population in the EU/EEA



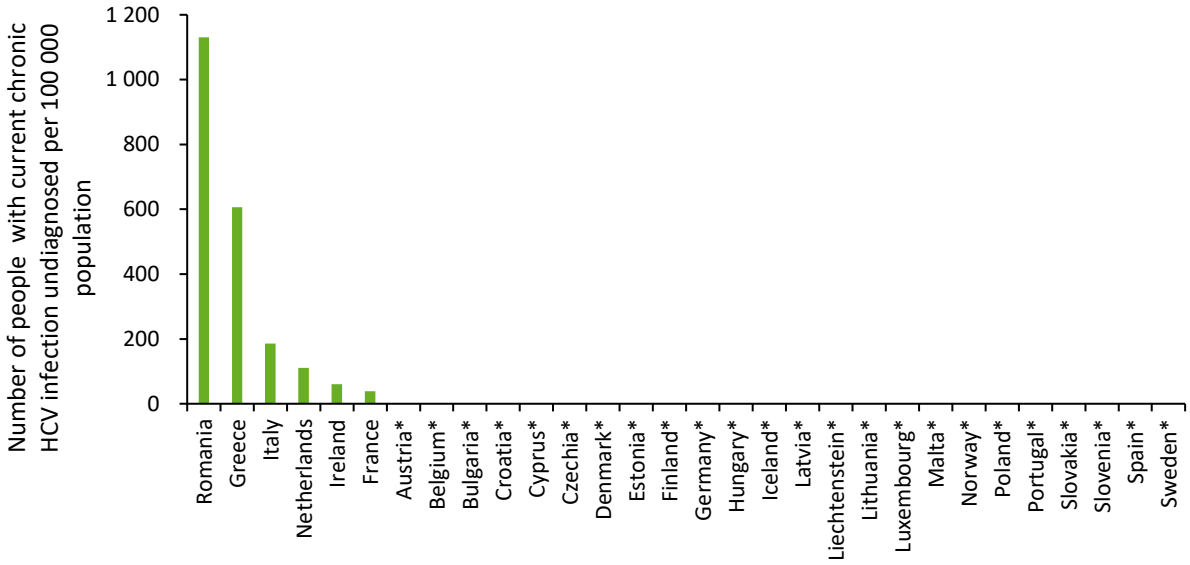
[a] 2020 or most recent year with available data (see Annex 2).
** Country did not provide data.*

Figure 23. Number of people diagnosed with chronic HCV infection during 2020[a], per 100 000 population in the EU/EEA



[a] 2020 or most recent year with available data (see Annex 2).
** Country did not provide data.*

Figure 24. Estimated number of people with chronic HCV infection who remained undiagnosed by the end of 2020[a], per 100 000 population in the EU/EEA



[a] 2020 or most recent year with available data (see Annex 2).
** Country did not provide data.*
Estimates exclude those with resolved infection and those who died.

Five countries reported estimates of the proportion of individuals with chronic HCV infection who had end-stage liver disease, including decompensated cirrhosis or hepatocellular carcinoma, at the time of diagnosis. It was estimated that as many as 27.2% of diagnosed cases presented with end-stage liver disease (Table 3). As with hepatitis B, more countries reported estimates for this indicator in the 2018 questionnaire. As the indicator definition changed to specify decompensated cirrhosis rather than cirrhosis in the 2021 questionnaire, fewer countries were able to report with the updated definition.

Table 3. Proportion of people with chronic HCV infection who had decompensated cirrhosis or hepatocellular carcinoma at the time of diagnosis, in the EU/EEA, 2020

Country	Proportion of people with end-stage liver disease at the time of diagnosis	Year of data
Denmark	13%	2016
Germany	2-34% cirrhosis; 1.2% hepatocellular carcinoma	2011-2012
Poland	4.5%	2019
Romania	25%	2019
Spain*	27.2%	2017

**Data from Spain are regional.*

Diagnosed patients with chronic HCV infection who were treated

EU/EEA progress towards 2020 targets

None of the nine countries that reported data on the proportion of diagnosed patients starting on treatment in 2020 met the 75% target.

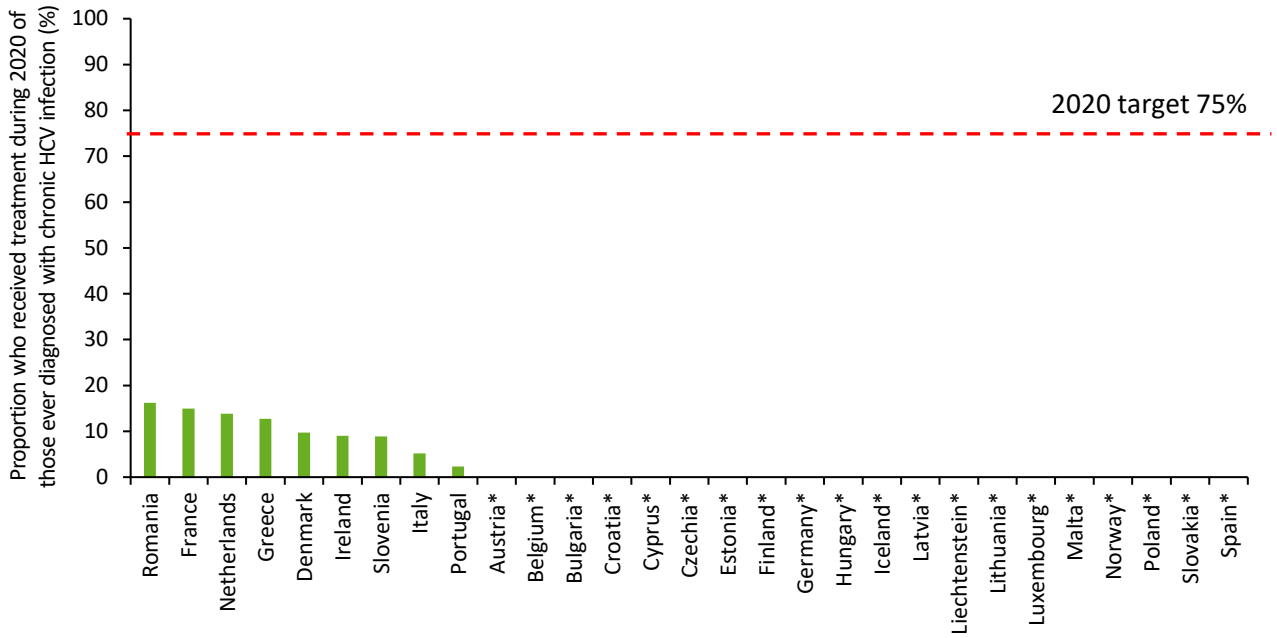
Linkage to care

The linkage to care indicator could not be calculated for HCV due to insufficient data collected.

Proportion receiving treatment with antivirals

Nine countries reported data on both the number of people diagnosed with chronic HCV infection and the number of those diagnosed who received treatment in 2020 (or the most recent year with data), which is the WHO monitoring and evaluation indicator[2] [11]. There were an estimated 578 587 people with current chronic HCV infection diagnosed, of whom 43 928 (0.08%) received treatment in 2020. This estimate falls far below the target of 75%. The proportion ranged from 2.3% in Portugal to 16.2% in Romania, with no country meeting the target.

Figure 25. Proportion of patients ever diagnosed and living with chronic HCV infection who received treatment, in the EU/EEA, during 2020[a]

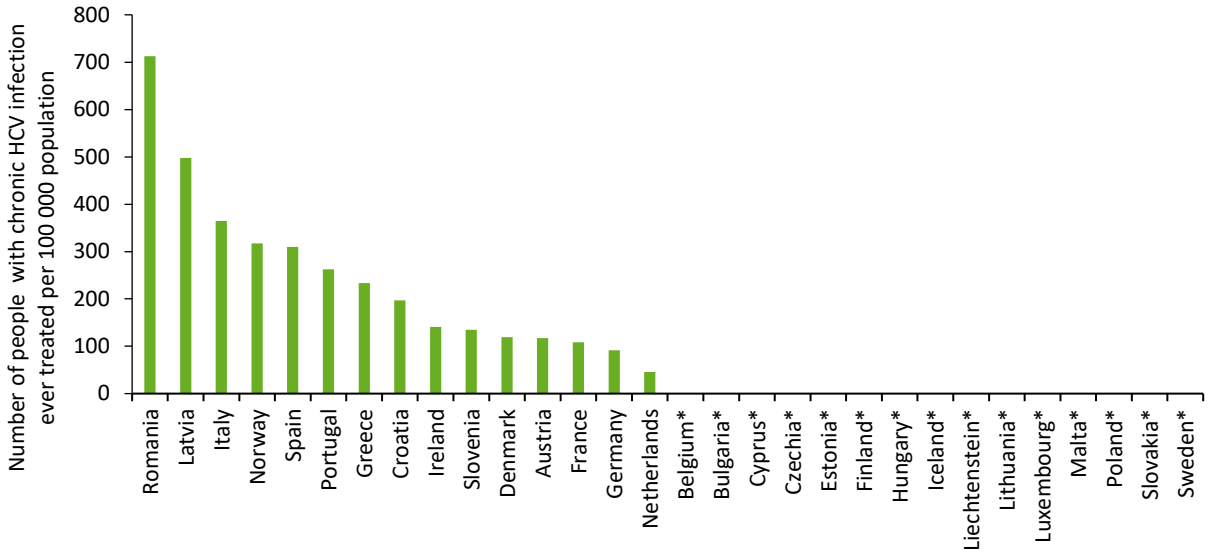


[a] 2020 or most recent year with available data (see Annex 2).
** Country did not provide data.*
Subnational data from the west of Denmark (regions: north, central and south) were scaled up to the national level.

Data was collected for two additional indicators relating to the monitoring of HCV treatment: number of people with chronic HCV infection who were ever treated with antivirals per 100 000 population (Figure 26) and proportion of people ever diagnosed with chronic HCV infection that were ever treated (Figure 27). The reported estimates of the number of people with chronic HCV infection who were ever treated per 100 000 population showed a 16-fold difference, ranging from 45.8 per 100 000 population in the Netherlands to 712.7 in Romania. The proportion of people ever diagnosed with chronic HCV infection who were ever treated ranged from 18.0% in Portugal to 100% in Croatia.

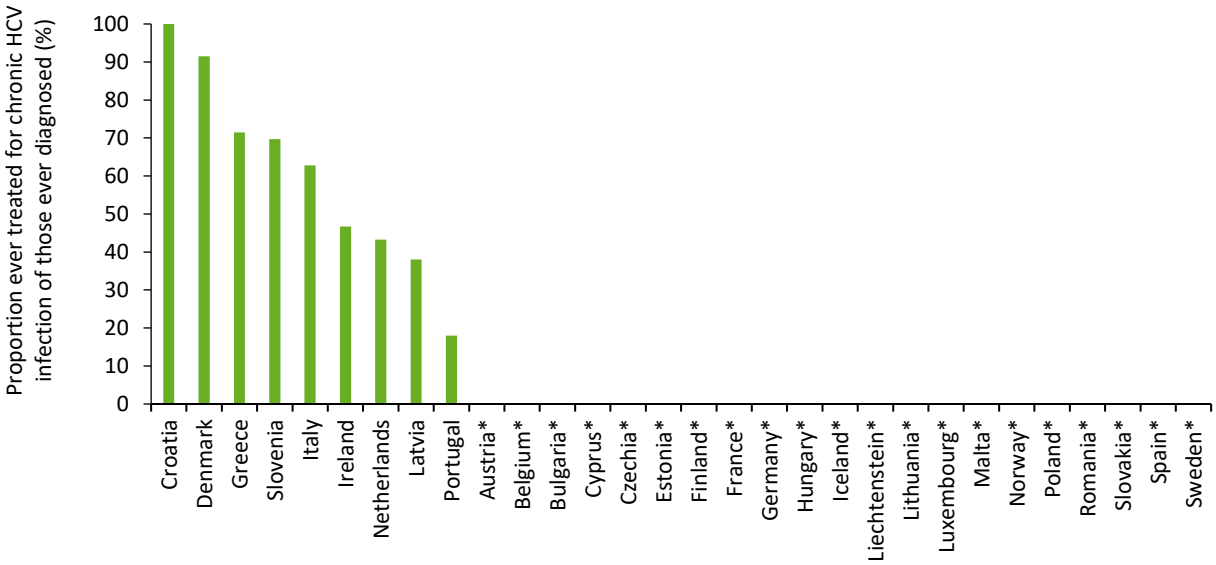
[2]**Indicator C.7.b**: Numerator (Number of persons already diagnosed with chronic HCV infection (defined as positive for HCV RNA or positive for HCV Ag) who initiated treatment during a specified time frame (e.g. 12 months))/Denominator (Number of persons already diagnosed with chronic HCV infection (defined as positive for HCV RNA or positive for HCV Ag) for the specified time period (12 months)) [11].

Figure 26. Number of people with chronic HCV infection who were ever treated with antivirals per 100 000 population in the EU/EEA, 2020[a]



[a] 2020 or most recent year with available data (see Annex 2).
** Country did not provide data.*
Subnational data from the west of Denmark (Regions: north, central and south) were scaled up to the national level.

Figure 27. Proportion of people ever diagnosed with chronic HCV infection who were ever treated, by the end of 2020[a] in the EU/EEA



[a]2020 or most recent year with available data (see Annex 2).
** Country did not provide data.*
Subnational data from the west of Denmark (Regions: north, central and south) were scaled up to the national level.

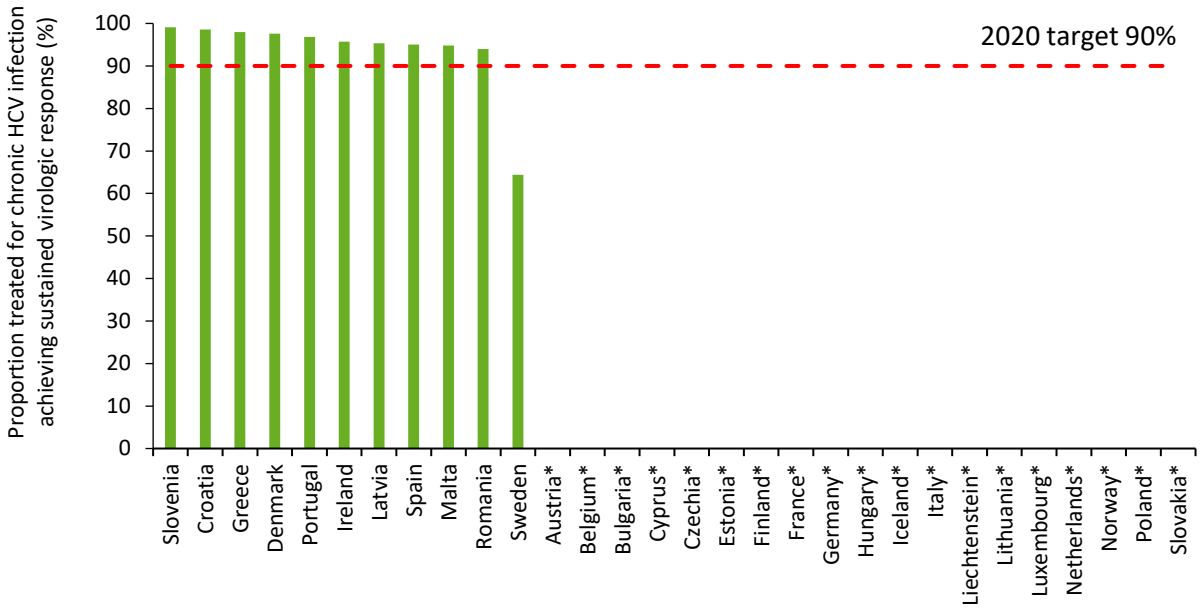
Sustained virologic response among those treated

EU/EEA progress towards 2020 targets

Eleven countries reported data on the number of people with chronic HCV who were treated and who achieved sustained virologic response in 2020 (or the most recent year with data), of which 10 had met and exceeded the target of 90% of those treated being cured.

Ten of the eleven countries reporting data on the WHO indicator for HCV treatment outcome, the number of patients receiving antiviral treatment with documentation of treatment outcome during 2020 (or the most recent year with data) and the number of patients who achieved sustained virologic response during that year, exceeded the target of 90% of those treated cured (Figure 28).

Figure 28. Proportion of people receiving antiviral treatment for chronic HCV infection with documentation of treatment outcome who achieved sustained virologic response during 2020[a] in the EU/EEA



[a] 2020 or most recent year with available data (see Annex 2).
** Country did not provide data.*
Subnational data from the west of Denmark (Regions: north, central and south) were scaled up to the national level.

Hepatitis C monitoring in key populations

The 2021 monitoring questionnaire contained sections to collect data for the hepatitis C continuum of care for two key populations who are disproportionately affected by chronic HCV infection: people who inject drugs and people in prison. In the questionnaire, the option was given to report data at the national, regional, city, clinic or prison level. Data availability was poor for the continuum of care for both people who inject drugs and people in prison, regardless of the geographical level of data reported. See Figure 29 for data availability for people who inject drugs.

Figure 29. Data availability for the hepatitis C continuum of care for people who inject drugs, including data at national, regional, city and clinic levels, in the EU/EEA, 2021

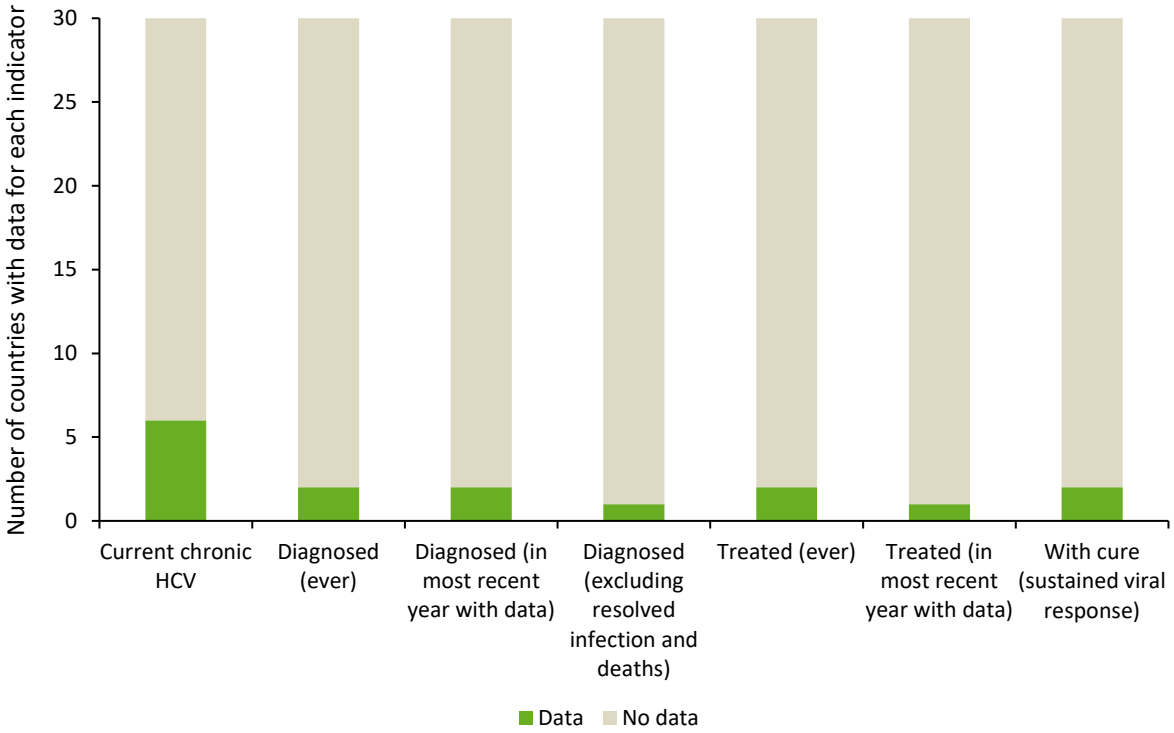
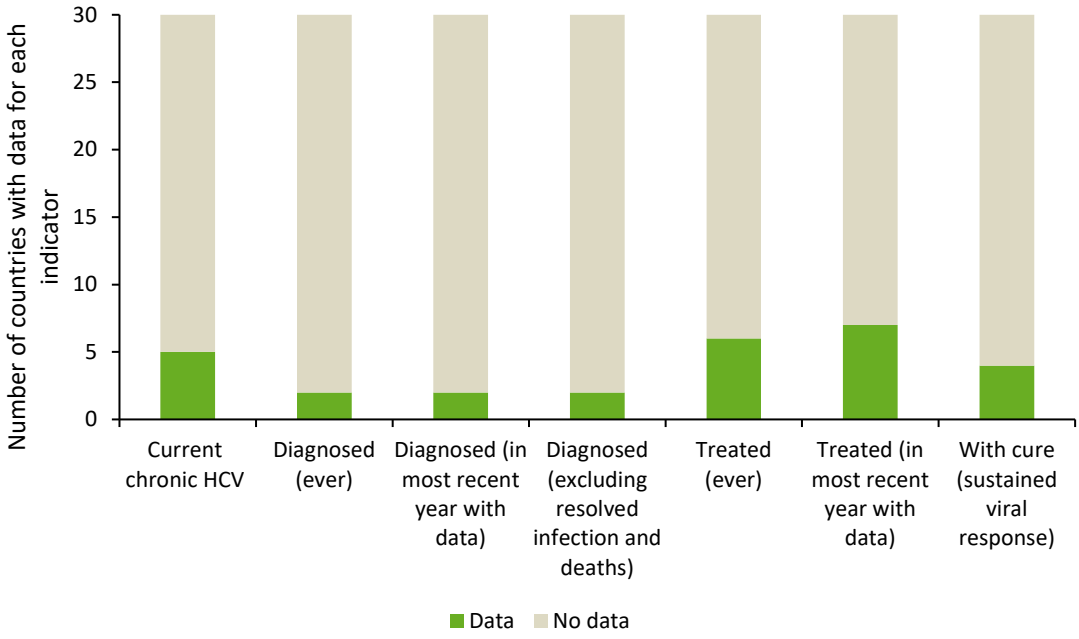


Figure 30 presents the data availability for the continuum of care for people in prison. While there was slightly better data availability compared to for people who inject drugs, there is overall poor data availability for all stages along the continuum, even when considering data for subnational geographic coverage.

Figure 30. Data availability for the hepatitis C continuum of care for people in prison, including data at national, regional, city and prison levels, in the EU/EEA, 2021

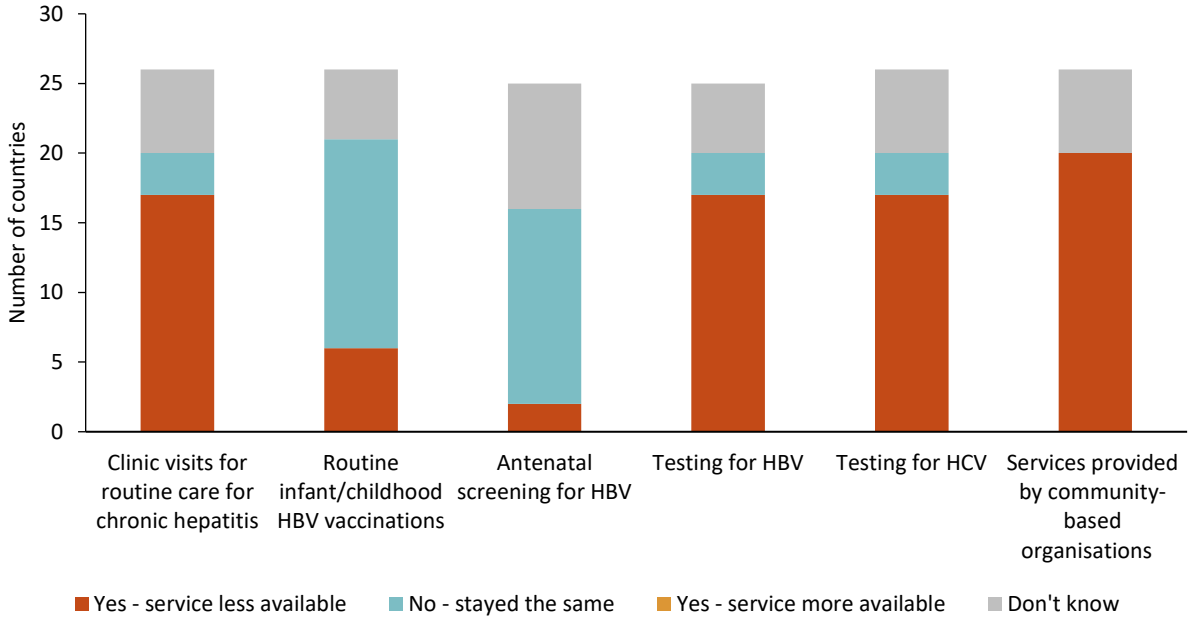


The impact of the COVID-19 pandemic on hepatitis B and C services, March 2020 to September 2021

To gauge the impact of the COVID-19 pandemic on hepatitis services in the EU/EEA, countries were asked several questions about different services and types of impact from March 2020 to the time of reporting (responses were submitted between July and September 2021).

Countries were asked whether the pandemic had an impact on the following services: clinic visits for routine care related to chronic HBV or HCV, including attendance for treatment; routine infant/childhood hepatitis B vaccinations; antenatal screening for HBV infection; testing for HBV and HCV; and services provided by community-based organisations like testing and peer counselling. The services most frequently reported to have been affected were services provided by community-based organisations, while the services least frequently reported were routine infant/childhood vaccinations and antenatal screening for HBV (Figure 31). No country reported that any service became more available during this period.

Figure 31. Hepatitis B and C services, in the EU/EEA, affected by COVID-19, starting March 2020

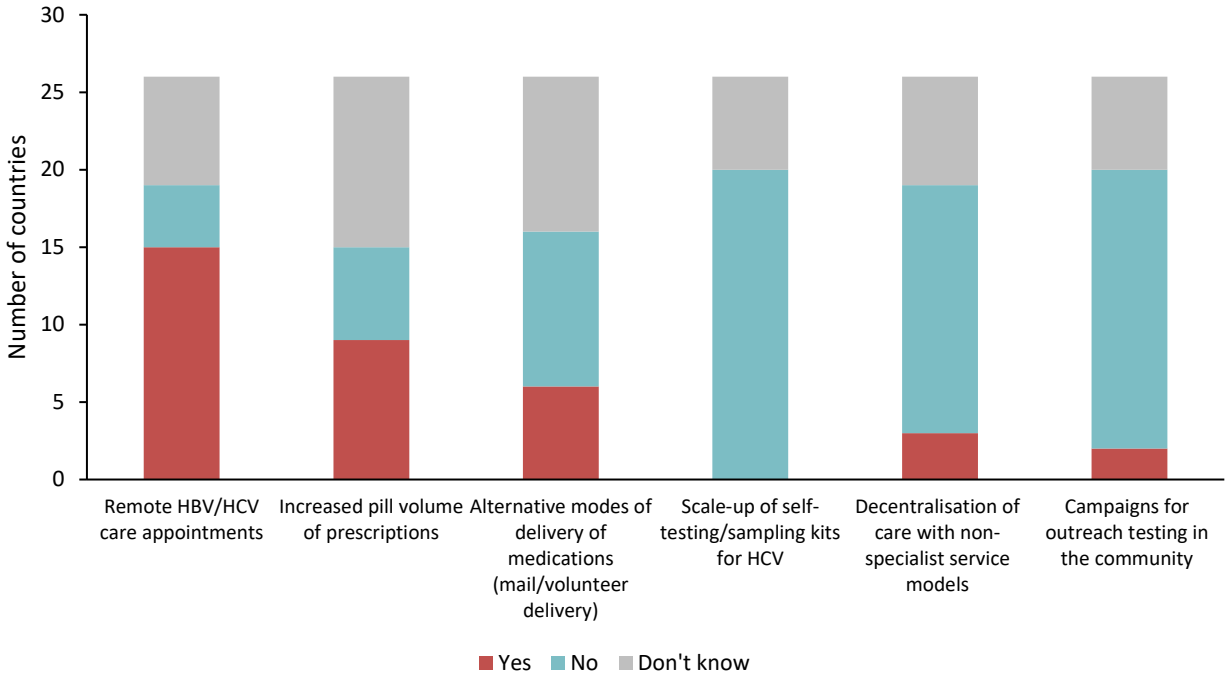


Countries were asked whether certain interventions had been introduced in response to the COVID-19 pandemic. These interventions included (full text of questionnaire response options):

- HBV/HCV care appointments conducted via telephone or online
- Increased pill volume of prescriptions (example: >1 month supply)
- Alternative modes of delivery of medications (example: mail or volunteer delivery)
- Scale-up of self-testing/self-sampling kits for HCV
- Decentralisation of care with non-specialist service models
- Campaigns for outreach testing for HBV and/or HCV in the community

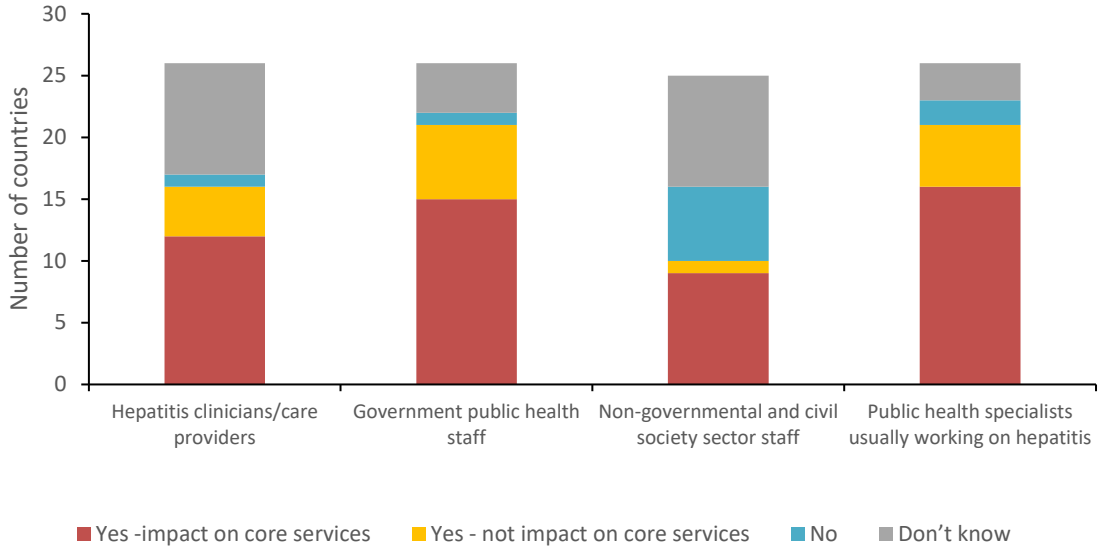
Fifteen out of 26 countries reported that HBV/HCV care appointments conducted via telephone or online were introduced, making this the most frequently reported intervention introduced in response to the pandemic (Figure 32).

Figure 32. Interventions introduced in response to the COVID-19 pandemic in the EU/EEA. 2020-2021



Countries were asked how the pandemic affected human resources, in terms of types of professionals and staff being reassigned away from hepatitis work and towards work on COVID-19. Twenty-one countries reported that government public health staff and hepatitis public health specialists were reassigned to work on COVID-19 (Figure 33). Non-governmental and civil society sector staff were least frequently reported to have been reassigned away from hepatitis work.

Figure 33. Reassignment of human resources away from hepatitis work and towards COVID-19 work in the EU/EEA. 2020-2021



Countries were asked whether there were issues with procurement, stock or supply of hepatitis treatments due to COVID-19, resulting in reduced patient access to treatment. For hepatitis B treatment, one country (4%) reported that there were issues, 17 countries (65%) reported no issues and eight countries (31%) reported that they didn't know. For hepatitis C treatment, two countries reported issues (8%), 17 countries (64%) reported no issues and seven countries (27%) reported that they didn't know.

Countries were asked whether laboratory capacity for hepatitis testing had been affected by COVID-19. For both hepatitis B and C, 12 countries (46%) reported that laboratory capacity had stayed the same, 10 countries (38%) reported reduced capacity for hepatitis testing, four countries (15%) reported that they didn't know and no countries reported increased testing capacity.

Countries were also asked whether governmental funding for hepatitis B and C services had been affected by the COVID-19 pandemic. Twenty-one countries (81%) reported no impact on funding, one country (4%) reported reduced governmental funding, four countries (15%) didn't know and no countries reported increased funding.

Data on the number of people tested for hepatitis B and C in each country were compared for the first round of data collection (2017 data) with the most recent round of data collection (2020 data) to see if there was any evidence that there was a change in number of individuals tested. Only two countries (Portugal and Romania) reported the number of people tested in 2017 and provided updated data for the number of people tested in 2020, allowing for this comparison. For hepatitis B testing, the number of individuals tested in Portugal remained very similar from 2017 to 2020 and declined somewhat in Romania in 2020 (Figure 34). For hepatitis C testing, the number of people tested in Portugal appeared to increase slightly in 2020 and to remain fairly stable in Romania (Figure 35). The COVID-19 pandemic did not appear to have had a strong impact on the number of people tested in these two countries.

Figure 34. Number of people tested for hepatitis B (HBsAg) in the EU/EEA, in 2017 and 2020

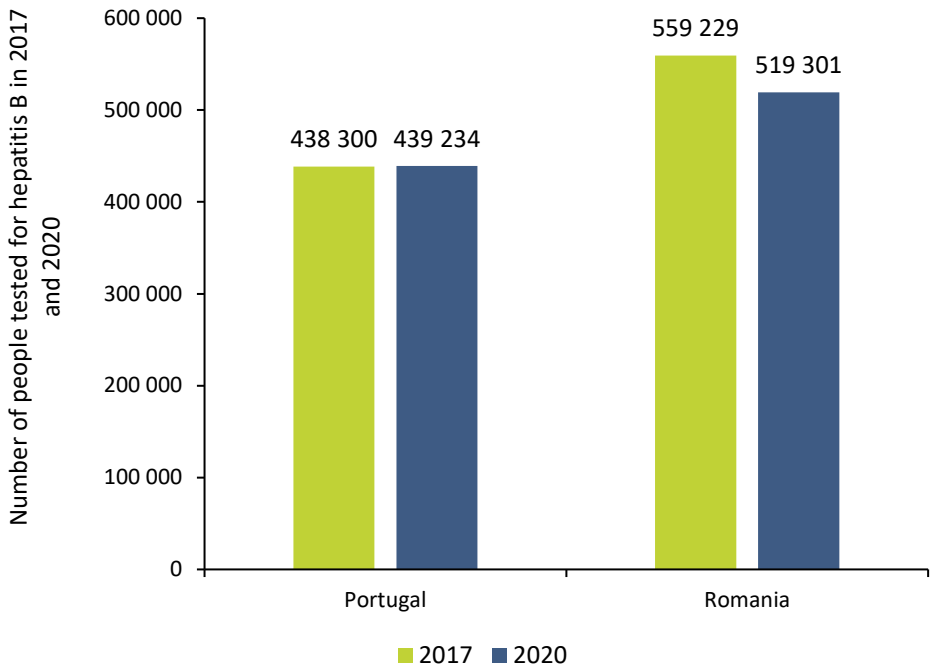
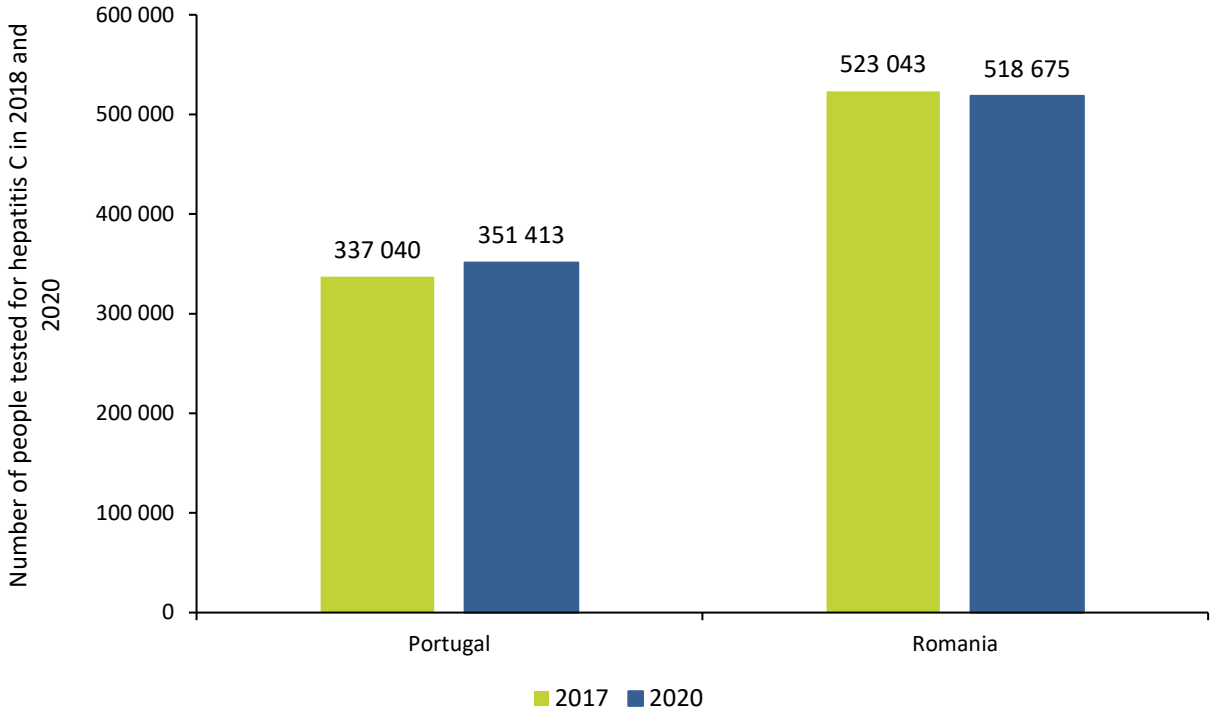


Figure 35. Number of people tested for hepatitis C (anti-HCV) in the EU/EEA, in 2017 and 2020



4. Discussion and conclusions

This report presents findings related to the hepatitis B and C continuum of care, policy on testing and treatment, and the impact of the COVID-19 pandemic on hepatitis services in the EU/EEA from the second data collection conducted in 2021. Data on these topics were collected directly from National Focal Points (NFPs) in 26 of the 30 countries in the EU/EEA. Data on the continuum of care were requested for 2020 or the most recent year with data; data on policy and the impact of COVID-19 reflect NFPs' views in 2021, during the period of data collection (July–September 2021). The monitoring questionnaire aimed to capture data that would inform progress towards the 2020 WHO European Region Action Plan service targets for the elimination of viral hepatitis. Policy and COVID-19 impact data are presented to provide information on the context and healthcare system environment in which hepatitis services were delivered.

Policy on testing and treatment

Having a national plan or strategy for the response to the hepatitis B and C epidemics is a crucial component of effectively prioritising the delivery of hepatitis services and making progress towards the goal of elimination. The successful development and implementation of such a plan requires funding and subsequent monitoring and evaluation. Nineteen of 26 reporting EU/EEA countries responded that there was a national plan or strategy for hepatitis response, but only 11 countries responded that the plan or strategy was funded from the national budget.

An effective policy framework for hepatitis B and C testing can play a key role in encouraging testing in a variety of settings and among key populations, reducing barriers to diagnosis. With 21 countries reporting having national testing guidance for HBV and 22 countries for HCV, there is fairly wide coverage of testing guidance among the 26 reporting countries. The identified gaps that need to be addressed in HBV and HCV testing policies and programmes were for healthcare workers, migrants, men who have sex with men and people in prison. Testing policies and programmes for other key populations had fewer gaps, with 21 or more countries reporting policies and programmes for people living with HIV and pregnant women for HBV and for people living with HIV and people who inject drugs for HCV.

Regarding the costs of hepatitis B and C testing for the individual, most countries reported that testing was free (either 'free at point of use' or 'user fee reimbursed by health system or insurance'), with three countries reporting 'user fee not reimbursed'. Only nine countries responded that tests were available in community and harm reduction settings from peer testers. There is evidence that testing coverage and positivity rates are high in community drug service settings, including both fixed settings and outreach settings [5], and that peer-supported and peer-led services can improve testing accessibility [12,13,14]. This indicates that it would be beneficial to address gaps in peer testing in countries where this testing strategy is not available. Similarly, 18 countries reported the existence of policies that require that hepatitis tests be performed by healthcare workers, highlighting another policy area that could be revised to allow for improved accessibility of testing. While almost all countries reported that rapid HCV tests were available, no country reported that self-tests for HCV had become available. New guidelines from WHO in 2021 strongly recommend HCV self-testing as an effective tool to accelerate progress towards diagnosis targets, as self-tests have been found to have high acceptability and usability [15].

Regarding policy on hepatitis B and C treatment, treatment restrictions for certain populations were reported in 10 countries, with undocumented migrants being the population identified most frequently as being subject to these restrictions. Only three countries reported treatment restrictions for people who inject drugs, which reflects progress (as a paper from 2018 reported such restrictions in seven countries [16]). In relation to the costs of hepatitis B and C treatment, in all 26 reporting countries there was an option for costs to be covered either by a national healthcare system or health insurance. However, three countries also reported that treatment was primarily covered by out-of-pocket costs for HBV or HCV treatment, with these costs presenting a likely barrier to treatment in these areas.

The hepatitis B and C continua of care

While the monitoring system aims to provide a comprehensive overview of the hepatitis B and C epidemics to guide the European Commission and other European agencies in their support of EU/EEA countries in achieving the goal of elimination, the availability of monitoring data on the continuum of care for hepatitis B and C in the general population and for hepatitis C in people who inject drugs and people in prison was very poor. Given the number of countries unable to report data on the stages of the continuum of care – including estimates of the numbers of people infected, diagnosed and treated, as well as treatment outcomes – it is not possible to obtain a comprehensive EU/EEA-wide assessment of progress towards the elimination targets. Data availability for the hepatitis C continuum of care was better than for the hepatitis B continuum of care overall, which is in line with data availability from the first round of

data collection in 2018 [9]. However, for both hepatitis B and C, data availability in 2021 was poorer than in 2018 for indicators related to the numbers of people infected and diagnosed. A major factor that likely contributed to the change in reporting ability was the COVID-19 pandemic, which had dramatic and wide-ranging impacts on countries' healthcare systems, data collection capabilities and human resources. As was reported by NFPs in the monitoring questionnaire, 21 countries saw public health specialists that usually work on hepatitis reassigned to COVID-19 work (16 affecting core services and five not affecting core services) and 21 countries saw governmental public health staff reassigned (15 affecting core services and six not affecting core services). Another factor that may have contributed to the decrease in the number of countries reporting certain indicators could be the revision of some of the indicator definitions.

Regarding the 50% diagnosis target for HBV for 2020, eight countries reported data and four countries met the target, with countries reporting a proportion diagnosed ranging from 17.5% to 66.7%. The other targets for HBV, for linkage to care, treatment and viral suppression, have very limited data that does not allow for a regional estimate of progress.

For the HCV diagnosis target of 50% for 2020, seven countries reported data and four met the target (range: 13.3%-80.6%). For the HCV treatment target, nine countries reported data on the proportion of cases ever diagnosed and receiving treatment in 2020 (range: 2.3% to 16.2%), with no country achieving the 2020 target. However, there were significant issues with the interpretation of this indicator, as discussed in the next section. The best progress towards reaching the elimination targets along the HCV continuum of care can be seen for the sustained virological response target among those initiating treatment. Ten of the eleven reporting countries exceeded the 90% target for sustained virological response among those treated, which aligns with evidence that the direct acting antivirals (DAAs) that are now in wide use have a high efficacy [17].

Aside from large gaps in data availability, there were several important methodological issues with the data that made it difficult to aggregate and compare for an assessment of progress at the EU/EEA level. Estimates of the number of people living with chronic HBV infection were available from 13 of the 26 reporting countries, but the quality of the estimates and methods for obtaining estimates (including surveys, modelling, the workbook method, surveillance and grey literature) were wide ranging and many of the estimates were out of date (with some dating back to 2001). Addressing the need for robust, up-to-date and comparable estimates for the number of people with chronic HBV infection is essential to understanding the scope of the epidemic in the region and to serve as the foundation for the rest of the stages of the continuum of care. Data on numbers ever diagnosed also came from a wide range of sources and methodologies, making comparison challenging. But these data were much more up to date with most of the data points updated for 2020. The large gaps in data for indicators on linkage to care, treatment and viral suppression reflect a lack of impetus and urgency to monitor the hepatitis B epidemic compared with the renewed push to monitor the hepatitis C epidemic in response to the introduction of highly effective DAA treatments for chronic HCV infection.

For the indicator 'number of people living with chronic HCV infection', data reporting in 2021 showed that existing estimates are often from older studies (most estimates were from 2001 to 2016). Newer, more reliable estimates are needed for accurate monitoring, as the increasing number of people being treated with DAAs and being subsequently cured in many countries will have had a large impact on the number of people currently living with chronic HCV infection. In addition, estimates should be adjusted for cases resolving naturally, deaths and migrating in or out of a country, as is also true for HBV estimates. The data collection efforts described here show that reliable data or estimates of current numbers infected are simply lacking. Addressing this gap in information is a high priority going forward to improve hepatitis monitoring and to inform response efforts.

Challenges with the HBV indicators

The major factor that creates difficulty with measuring and interpreting continuum of care indicators for hepatitis B is that many cases of chronic HBV infection are not clinically eligible for treatment with antiviral medications. It is estimated that 12 to 25% of chronic HBV cases are eligible for treatment in accordance with different guidelines [18]. This characteristic disrupts the continuity of the continuum from step to step and does not allow for assessment of progress towards targets in the many cases where treatment eligibility data are not available. This characteristic of hepatitis epidemiology mainly affects the indicators for linkage to care and proportion treated of those diagnosed.

The WHO indicator for proportion of chronic cases diagnosed is 'proportion of people living with chronic HBV infection who have been diagnosed with HBV'. While this indicator does not have any inherent issues, two updated indicators were added to the 2021 monitoring round: number of people ever diagnosed with chronic HBV per 100 000 population and number of people diagnosed in 2020 (or most recent year with data) per 100 000 population. This was done to overcome the issue of poor quality, out-of-date or missing estimates for 'number of people with chronic HBV infection' and to create indicators that show both current and historical testing efforts in a country in a way that is comparable across countries in the region.

The WHO indicator for proportion of HBV cases who are linked to care has issues that prevent clear and useful interpretation. The indicator is defined in the WHO monitoring and evaluation technical report [11] as 'number of HBV-infected persons who received care in the past 12 months over estimated population of persons with chronic HBV', with a different denominator than the WHO European Region Action Plan indicator. The target in the WHO European Region Action Plan is '90% of patients diagnosed with chronic HBV infection to be linked to care and adequately monitored', which is more in line with most continuum of care frameworks but does not provide detail about time periods for the numerator and denominator. Defining the time periods for both the numerator and denominator is important to provide greater standardisation. While this is not specifically suggested by Safreed-Harmon et al. [19] for a linkage to care indicator, their framework for defining time periods for indicators would be useful for a linkage to care indicator (e.g. number of people linked to care in 2020, of those diagnosed with chronic HBV and eligible for antiviral treatment in 2019 or 2020).

The main continuum of care indicator that is affected by variation in treatment eligibility is the proportion of people receiving treatment of those diagnosed. This indicator is defined by WHO as the number of people 'with chronic HBV infection who are currently receiving treatment' over the number of people 'with chronic HBV infection'. Again, the indicator 'number with chronic HBV diagnosed' does not have a standard denominator in different continuum of care frameworks. The numerators and denominators often do not specify that the indicator should only include those who are eligible for antiviral treatment. The target in the WHO European Region Action Plan is '75% of patients diagnosed with chronic HBV and eligible for treatment, to begin treatment,' which serves as a more accurate indicator. The monitoring survey collected data on the number of people ever diagnosed and eligible for treatment (denominator) and the number of people on treatment in 2020 or the most recent year with data (numerator), but only one country, Romania, reported both the numerator and the denominator for this stage of the continuum of care.

An additional HBV treatment indicator was included: proportion of people retained in care, of those diagnosed with chronic HBV and not clinically eligible for antiviral treatment (according to EASL criteria). This was added because tracking retention in care among those with chronic HBV infection who are not eligible for antiviral treatment is important. It was proposed that this would be calculated by subtracting 'treatment-eligible' diagnosed cases from all diagnosed cases for use in the denominator. Through input from NFPs, it was determined that it would be incorrect to assume that all people diagnosed but not determined to be eligible for treatment are not eligible for treatment, as the treatment eligibility status for those cases is unknown. In the future, the indicator may be modified to have a denominator of those linked to care and not eligible for treatment, as treatment eligibility would be determined after linkage to care is established.

Challenges with the HCV indicators

As for the HBV indicators, no inherent issues were found with regards to the measurement and interpretation of the WHO HCV indicators for number of people with chronic infection or for proportion of cases who had initiated treatment and achieved sustained virological response. For these indicators, the monitoring system collected the data for the WHO indicators, and no supplementary indicators were added.

The WHO European Region indicator for proportion diagnosed is the proportion of all people living with chronic HCV infection who have been diagnosed [8] or, as clarified by the 2016 WHO monitoring and evaluation technical report, the 'Number of persons with chronic HCV infection who have been diagnosed *over* estimated number of persons with chronic HCV infection' [11]. This proportion is difficult to calculate and monitor because the denominator, 'all persons with chronic HCV' infection, is constantly changing as individuals with chronic HCV infection are treated and cured. It is critical that the denominator reflects the number of people living with current chronic infection. Many countries were unable to adjust their estimate of people with chronic HCV infection over time to account for these changes. The numerator, those living with chronic HCV infection who have been diagnosed, is also constantly shifting and should also reflect those living with current chronic infection who are diagnosed; however, it should not include those who have been diagnosed and subsequently treated and cured. The monitoring data collection has shown that it is challenging for countries to accurately report both of these figures. The indicator is also difficult to interpret over time and between different countries, as many countries have substantially increased their treatment efforts in the past few years with the advent of highly effective DAAs and as many diagnosed cases have been treated, resulting in large changes in both the numerator and the denominator.

In response to these challenges, the ECDC team and expert advisory group proposed new indicators to supplement the WHO indicator. The following new indicators were included in the 2021 data collection:

- The number of people with chronic HCV infection ever diagnosed per 100 000 population. This indicator provides limited information but clarifies the historical context of HCV disease burden and testing efforts in a country.
- The number of people diagnosed in the most recent year with available data per 100 000 population. This indicator provides a current snapshot of testing efforts.
- The number of people with current chronic HCV infection who remain undiagnosed per 100 000 population. This indicator provides a measure of the unmet need for testing and diagnosis – a measure of the progress a country has yet to make. While this indicator still requires information on the number of people diagnosed, excluding those with resolved infection and those who died or migrated in or out of the country, the denominator is fixed as the population of the country, allowing for more straightforward comparison over time.

Taken together, these indicators may provide more meaningful information for regional monitoring, allowing for comparisons between countries. They also serve to overcome the challenge of having weak estimates for the number of people living with chronic HCV infection that don't account for those treated and cured. However, in the 2021 reporting round, most countries were still unable to provide the requested data.

The WHO European Region indicator for the proportion of people on treatment is the 'proportion of eligible patients diagnosed with chronic HCV infection receiving effective treatment' [8] and is defined in the WHO monitoring and evaluation technical report as the number of people 'already diagnosed with chronic HCV infection who initiated treatment during a specified time period (e.g. 12 months) *over* the number already diagnosed with chronic HCV infection for the specified time period' with a note for the denominator that 'all those already diagnosed to date but treated and cured would be excluded' [11]. With the denominator constantly changing due to the removal of those treated and cured, this data point is also difficult for countries to measure and report and the indicator is challenging to interpret over time. Additionally, this indicator only represents numerator data from a limited time period (e.g. one year) over a cumulative count of chronic HCV infection cases diagnosed, which underestimates progress towards treatment targets. This indicator also does not reflect historical efforts and progress made on HCV treatment, adding to the difficulty of interpretation.

To supplement the WHO indicator, two new indicators were proposed and collected in the 2021 monitoring survey:

- The number ever treated with antivirals for chronic HCV infection per 100 000 population. This indicator provides more information about the historical efforts towards HCV treatment, but it is influenced by the burden of disease in a country and doesn't distinguish between different eras or phases of treatment provision (e.g. before and after the advent of DAAs). Like the other proposed indicators showing population rates, it allows for comparison across a geographic region.
- The proportion of people ever diagnosed who were ever treated by the end of a specified year (e.g. 2020). This indicator addresses the issue of a constantly shifting denominator due to cases who have been cured (or have died) by having a denominator that is cumulative over time. This indicator provides more of a historical, additive view and is more in line with the treatment indicators for HIV and HBV.

For the monitoring of HCV treatment progress, a combination of an indicator showing context and historical progress (e.g. the two proposed above) along with an indicator that considers cases diagnosed and started on treatment within a recent time frame (as presented in the consensus cascade of care from Safreed-Harmon et al [19]) is recommended.

The impact of the COVID-19 pandemic on hepatitis services

Widespread impacts of the COVID-19 pandemic were reported on different types of hepatitis services, from clinic visits for routine care, testing and reassignment of human resources, to the introduction of innovative new interventions. While most countries reported no impact on routine hepatitis B prevention activities (including antenatal screening and routine infant/childhood vaccinations), 17 or more countries reported negative impacts on clinic visits for routine care, testing for HBV and HCV, and services provided by community-based organisations. The reports of reduced hepatitis B and C testing align with the findings of several other studies in the European region, indicating hepatitis screening and diagnosis may have been one of the areas of hepatitis services that was most affected by the pandemic [20,21]. Only two countries (Portugal and Romania) reported data on the number of people tested for hepatitis B and C in 2017 and 2020 in order to compare monitoring data. Portugal's data showed stable levels of HBV testing and slightly increased HCV testing from 2017 to 2020, while Romania's data showed slightly decreased HBV testing and stable testing levels for HCV from 2017 to 2020. With little data availability for comparison, it is challenging to detect trends in the impact of COVID-19 on testing levels in EU/EEA countries. Additionally, 10 countries (38%) reported reduced laboratory capacity for hepatitis testing.

Maintaining and improving hepatitis prevention measures is key to staying on track to meet regional and global targets for viral hepatitis elimination. The questionnaire responses indicated that routine infant/childhood hepatitis B vaccination was negatively affected in six countries. In terms of coverage, data from WHO shows that the 55 countries in the European Region had a 1% overall decrease in the third dose of childhood DTP3 vaccine (used as a trace indicator) from 2019 to 2020, but that there was wide variation in the decreases seen by each country [22].

Hepatitis B and C treatment and governmental funding for hepatitis programmes appeared to be protected, with few countries reporting changes to these factors. Reassignment of human resources away from hepatitis work and towards COVID-19 work seemed to be more common, particularly governmental public health staff and public health specialists, the categories of workers most closely tied to surveillance and monitoring.

Although the COVID-19 pandemic has presented major challenges to many hepatitis services in the EU/EEA, some countries have taken the opportunity to implement new innovative strategies to minimise service disruptions. The intervention most frequently reported was the introduction of remote hepatitis care appointments via telephone or internet, but treatment-related interventions (e.g. increased volume of prescriptions and alternative modes of medication delivery), were also implemented in many countries. Introduction of interventions for testing, including campaigns for outreach testing in the community and self-sampling and self-testing approaches were least frequently reported, indicating missed opportunities to address identified reductions in testing.

Limitations

While there is extensive discussion of limitations on the availability and quality of data and issues with indicators in the above sections, there were additional limitations that limited the ability to draw conclusions from the data presented to enable a comprehensive understanding of the hepatitis B and C epidemics in the EU/EEA. One key limitation was that this analysis did not include prevention indicators, impact indicators or progress towards related targets, such as vaccination coverage or incidence, which are key to having a full understanding of progress towards elimination.

Additionally, the data collected in the monitoring questionnaire on the impacts of the COVID-19 pandemic on hepatitis services in the region are categorical, not quantitative, in nature. It is important to interpret these findings considering other sources of data, including quantitative data, as the pandemic continues to progress. The data on COVID-19 impacts and on policies related to testing and treatment rely on reporting from a small number of in-country NFPs. While these data can provide valuable context in which to interpret the recent data on hepatitis testing, treatment and treatment outcomes, data on these topics may be improved by validation with other country experts, including community-based and civil society organisations.

Conclusions

This report assesses data availability and progress towards the 2020 WHO European Region Action Plan targets for the continuum of care for hepatitis B and C in the EU/EEA. It also provides an overview of hepatitis B and C testing and treatment policies and impacts of the COVID-19 pandemic on hepatitis services in the EU/EEA. Data were collected via an online survey in 2021 for the purpose of monitoring the hepatitis response and progress towards the 2020 targets, as an interim step towards the 2030 targets for hepatitis elimination in the WHO Global Health Sector Strategy (GHSS). The 2030 targets for viral hepatitis from the WHO GHSS are, for the continuum of care, that 90% of those with hepatitis B and C are diagnosed and that 80% are treated. The results of the 2021 monitoring survey show that there is still a severe lack of country-level monitoring data on hepatitis B and C prevalence, diagnosis, treatment and treatment outcomes in the EU/EEA, preventing a clear or comprehensive region-wide assessment of progress towards the targets. While there are data from countries for some of the indicators that show varying levels of progress towards targets, the need to increase the collection of up-to-date, robust data is urgent. This is especially challenging given reports from countries of the wide-spread negative impacts of the COVID-19 pandemic on human resources in public health and governmental organisations.

Priority areas for action

To address the findings and practical and methodological limitations presented in this report, select priority areas for action have been identified:

- Significant gaps in the data related to the prevalence, diagnosis, treatment and treatment outcomes for hepatitis B and C in EU/EEA countries present a major challenge to monitoring progress towards the 2020 and 2030 targets of elimination for hepatitis. To guide national responses to hepatitis B and C, countries should prioritise improving the quality of their monitoring systems. Data are especially lacking for the general population for hepatitis B and for the key populations presented here (people who inject drugs and people in prison) for hepatitis C.
- Methodological issues with some of the WHO-defined indicators for the continuum of care must be addressed to consider the nuances of hepatitis B and C epidemiology and to provide clarity and improved accuracy for standardised data collection. For hepatitis B, this means highlighting eligibility for antiviral treatment in indicator definitions; for hepatitis C, this includes highlighting the constantly shifting numerators and denominators of indicators to account for the chronic infections that are cured using newer, more effective and widely accessible DAA treatments.
- The 2021 monitoring survey included the collection of data for several additional continuum of care indicators formulated by the ECDC hepatitis expert advisory group. These additional indicators were added to try to address the methodological issues mentioned above. The survey results show that many countries do not have data to report for these indicators. Some of the additional indicators, like proportion of those with HBV not eligible for antiviral treatment who are retained in care, were found to not sufficiently address the identified issues. We propose reducing the number of data points/indicators collected in the next monitoring survey, due to the lack of reported data and in order to minimise the reporting burden for countries.
- While the number of indicators on the continuum of care should be streamlined, indicator definitions should be further refined to provide accurate data that reflects the complex epidemiology of hepatitis B and C, the progress made towards elimination and the remaining effort needed to address gaps in services.
- The collection of robust, up-to-date information using epidemiologically sound methods could be greatly improved by increased collaboration between different stakeholders in the field of viral hepatitis, including public health departments, clinical bodies, and civil society and community-based organisations.
- ECDC has several projects planned to improve the availability of data and estimates, and to support countries in their hepatitis monitoring efforts. These projects include the modelling of new estimates for the number of people infected, data collection on mortality caused by hepatitis and a sentinel site surveillance project to improve data collection on testing and late diagnosis in different service settings.
- As the COVID-19 pandemic continues to create unprecedented global challenges to responses to other infectious diseases, it is critical to continue to measure the impact of the pandemic on the viral hepatitis response. The data on the impact of COVID-19 on hepatitis services presented here should be considered alongside other sources of data on this issue, including qualitative data on impacts on prevention, testing and treatment services. The possibility of aligning the collection of high-quality data on hepatitis with the collection of COVID-19 data, such as estimates of seroprevalence through well-conducted population surveys, should be explored.

References

1. Hofstraat SH, Falla AM, Duffell EF, Hahné SJ, Amato-Gauci AJ, Veldhuijzen IK, et al. Current prevalence of chronic hepatitis B and C virus infection in the general population, blood donors and pregnant women in the EU/EEA: a systematic review. Epidemiology and infection. 2017 Oct;145(14): 2873-85.
2. Mårdh O, Quinten C, Amato-Gauci AJ, Duffell E. Mortality from liver diseases attributable to hepatitis B and C in the EU/EEA – descriptive analysis and estimation of 2015 baseline. Infectious Diseases. 2020;52(9):625-37.
3. Blachier M, Leleu H, Peck-Radosavljevic M, Valla DC, Roudot-Thoraval F. The burden of liver disease in Europe: a review of available epidemiological data. J Hepatol. 2013;58(3):593-608.
4. Dultz G, Zeuzem S. Hepatitis C. A European perspective. Gastroenterol Clin North Am. 2015;44(4):807-24.
5. European Centre for Disease Prevention and Control. Hepatitis B and C testing strategies in healthcare and community settings in the EU/EEA. Stockholm: ECDC; 2018.
6. United Nations. Transforming our world: the 2030 agenda for sustainable development. New York: UN; 2015.
7. World Health Organization. Global health sector strategy on viral hepatitis 2016-2021. Towards ending viral hepatitis. Geneva: WHO; 2016.
8. World Health Organization Regional Office for Europe. Action plan for the health sector response to viral hepatitis in the WHO European Region. Copenhagen: WHO/Europe; 2016.
9. European Centre for Disease Prevention and Control. Monitoring the responses to hepatitis B and C epidemics in EU/EEA Member States, 2019. Stockholm: ECDC; 2020.
10. Joint United Nations Programme on HIV/AIDS. 90-90-90 An ambitious treatment target to help end the AIDS epidemic. Geneva: UNAIDS; 2014.
11. World Health Organization. Technical Report: Monitoring and evaluation for viral hepatitis B and C: recommended indicators and framework. Geneva: WHO; 2016.
12. Suijkerbuijk AWM, van Hoek AJ, Koopsen J, de Man RA, Mangen MJ, de Melker HE, et al. Cost-effectiveness of screening for chronic hepatitis B and C among migrant populations in a low endemic country. PloS one. 2018;13(11):e0207037.
13. Ward Z, Mafirakureva N, Stone J, Keevans M, Betts-Symonds G, Crowley D, et al. Cost-effectiveness of mass screening for Hepatitis C virus among all inmates in an Irish prison. International Journal of Drug Policy. 2021;96:103394.
14. Martin NK, Hickman M, Miners A, Hutchinson SJ, Taylor A, Vickerman P. Cost-effectiveness of HCV case-finding for people who inject drugs via dried blood spot testing in specialist addiction services and prisons. BMJ Open. 2013;3(8):e003153.
15. World Health Organization. WHO releases first guidelines on hepatitis C virus self-testing. Copenhagen: WHO/Europe; 2021. Available from: https://www.who.int/news/item/15-07-2021-who-releases-first-guidelines-on-hepatitis-c-virus-self-testing
16. Marshall AD, Cunningham EB, Nielsen S, Aghemo A, Alho H, Backmund M, et al. Restrictions for reimbursement of interferon-free direct-acting antiviral drugs for HCV infection in Europe. Lancet Gastroenterol Hepatol. 2018;3(2):125-33.
17. Pawlotsky J-M, Negro F, Aghemo A, Berenguer M, Dalgard O, Dusheiko G, et al. EASL recommendations on treatment of hepatitis C: Final update of the series. Journal of Hepatology. 2020;73(5):1170-218.
18. Tan M, Bhadoria AS, Cui F, Tan A, van Holten J, Easterbrook P. Estimating the proportion of people with chronic hepatitis B virus infection eligible for hepatitis B antiviral treatment worldwide: a systematic review and meta-analysis. Lancet Gastroenterol Hepatol. 2021;6(2):106-119.
19. Safreed-Harmon K, Blach S, Aleman S, Bollerup S, Cooke G, Dalgard O, et al. The Consensus Hepatitis C Cascade of Care Standardized Reporting to Monitor Progress Toward Elimination. Clin Infect Dis. 2019;69(12):2218–2227.
20. Coalition for Global Hepatitis Elimination. European Region: Impact of the COVID-19 Response on Hepatitis Elimination Efforts. Atlanta: Coalition for Global Hepatitis Elimination; 2021.
21. Simoes D, Stengaard AR, Combs L, Raben D, the EuroTEST COVID-19 impact assessment consortium of partners. Impact of the COVID-19 pandemic on testing services for HIV, viral hepatitis and sexually transmitted infections in the WHO European Region, March to August 2020. Euro Surveill. 2020;25(47):2001943. Available from: https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2020.25.47.2001943

22. World Health Organization Regional Office for Europe. Varied impact of COVID-19 on routine immunization in the European Region. Copenhagen: WHO/Europe; 2021. Available from: https://www.euro.who.int/en/health-topics/communicable-diseases/hepatitis/news/news/2021/7/varied-impact-of-covid-19-on-routine-immunization-in-the-european-region

Annex 1. Data on the hepatitis B continuum of care

Table 1A. Number of people with chronic HBV infection

Country	Population	A. Estimated number of people living with chronic HBV infection (HBsAg positive), diagnosed and undiagnosed, by the end of 2020*	Year (A)	A per 100 000 population
Austria	8 901 064	-	-	-
Belgium	11 522 440	-	-	-
Bulgaria	6 951 482	-	-	-
Croatia	4 058 165	25 000	2013	616.0
Cyprus	888 005	-	-	-
Czechia	10 693 939	-	-	-
Denmark	5 822 763	**10 668**	2007	183.2
Estonia	1 328 976	-	-	-
Finland	5 525 292	**17 900**	2006	324.0
France	67 320 216	135 706	2016	201.6
Germany	83 166 711	**247 000**	2013	297.0
Greece	10 718 565	200 000	2015-2018	1865.9
Hungary	9 769 526	-	-	-
Iceland	364 134	-	-	-
Ireland	4 964 440	18 000	Mixed	362.6
Italy	59 641 488	**332 000**	2016	556.7
Latvia	1 907 675	**49 600**	2001	2600.0
Liechtenstein	38 747	-	-	-
Lithuania	2 794 090	-	-	
Luxembourg	626 108	-	-	-
Malta	514 564	-	-	-
Netherlands	17 407 585	**49 000**	2016	281.5
Norway	5 367 580	-	-	-
Poland	37 958 138	250 000	2016	658.6
Portugal	10 295 909	**~40 000**	2015-2016	400
Romania	19 328 838	640 176	2015	3312.0
Slovakia	5 457 873	-	-	-
Slovenia	2 095 861	-	-	-
Spain	47 332 614	-	-	-
Sweden	10 327 589	-	-	-

** 2020 or the most recent year with data.*
All geographic coverage is at the national level unless otherwise specified. Subnational data (at the regional, city, or clinic level) are reported in these tables, but were not used in the graphs and data presented in the body of the report. Estimates/data in bold have been updated since the 2018 survey. Blue column headings are calculated indicators. Population data are from EuroStat.

Table 2A. HBV infection diagnosis

Country	B. Number of people ever diagnosed and living with chronic HBV infection (HBsAg) by the end of 2020*	C. Number of people diagnosed with chronic HBV infection (HBsAg) during 2020*	Year (B and C)	B/A (%) Proportion of people diagnosed	B per 100 000 population	C per 100 000 population	D. % of people with chronic HBV infection who have decompensated cirrhosis and/or HCC at the time of diagnosis	E. Number of people tested for hepatitis B (HBsAg) in 2020*, including rapid tests (if possible)	Year (E)	Testing data, 2018 survey: number of people tested for HBsAg in 2017 (or most recent data)
Austria	-	**948**	2020	-	-	10.7	-	-	-	-
Belgium	-	-	-	-	-	-	-	-	-	-
Bulgaria	**2 887**	-	2020	-	41.5	-	-	-	-	-
Croatia	-	-	-	-	-	-	-	-	-	-
Cyprus	-	-	-	-	-	-	-	-	-	-
Czechia	-	**142**	2020	-	-	1.3	-	-	-	-
Denmark	**7 112**	400	2007; 2020	66.7	122.1	6.9	-	-	-	-
Estonia		-	-	-	-	-	-	-	-	-
Finland	**7 578**	**160**	2020	42.3	137.2	2.9	-	-	-	-
France	23 749	-	2016	17.5	35.3	-	-	**4 300 000**	2016	-
Germany	-	**3 071**	2020	-	-	3.7	6.2-28% cirrhosis; 1.6-9.9% HCC	**-**	-	-
Greece	**120 000**	-	2015-2018	60.0	1 119.6	-	-	**-**	-	-
Hungary	-	-	-	-	-	-	-	**-**	-	-
Iceland	-	-	-	-	-	-	-	**-**	-	-
Ireland	**11 584**	**327**	2020	64.4	233.3	6.6	-	**-**	-	145 798
Italy	-	-	-	-	-	-	-	**-**	-	-
Latvia	**24 000**	**214**	2020	48.4	1 258.1	11.2	-	**53 848**	2017	-
Liechtenstein	-	-	-	-	-	-	-	**-**	-	-
Lithuania	-	-	-	-	-	-	-	**-**	-	-
Luxembourg	-	-	-	-	-	-	-	**-**	-	-
Malta	-	-	-	-	-	-	-	**-**	-	-
Netherlands	**28 000**	**688**	2000-2020	57.1	160.8	4.0	-	**-**	-	-

Norway	-	-	-	-	-	-	-	**-**	-	-
Poland	115 000	**979**	2016; 2020	46.0	303.0	2.6	0.015	**430 267**	2020	-
Portugal	-	35	2020	**-**	-	0.3		**439 234**	2020	438 300
Romania	-	**2 246**	2020	-	-	11.6	0.4	**519 301**	2020	559 229
Slovakia	-	-	-	-	-	-	-	**-**	-	-
Slovenia*	***2 597***	***231***	***2020***	-	-	-	-	**102 484**	2020	-
Spain	-	-	-	-	-	-	-	-	-	-
Sweden	**-**	**679**	2018, 2020	-	-	6.6	-	-	-	-

HCC: Hepatocellular carcinoma
** 2020 or the most recent year with data*
All geographic coverage is at the national level unless otherwise specified. Subnational data (at the regional, city, or clinic level) are reported in these tables, but were not used in the graphs and data presented in the body of the report. Data in red italics are subnational, at the regional level. Estimates/data in bold have been updated since the 2018 survey. Blue column headings are calculated indicators. Population data are from EuroStat.
Slovenia: subnational data are from the Central region of Slovenia (570 773 inhabitants).

Table 3A. HBV infection linkage to care and treatment

Country	F. Number of people ever diagnosed with chronic HBV infection (HBsAg) linked to care in 2020*	Year (F)	F/B (%) Proportion of people linked to care	G. Number people diagnosed with chronic HBV infection (HBsAg) not eligible for treatment* who are retained in care** by the end of 2020*	Year (G)	H. Number of people diagnosed with chronic HBV infection by the end of 2020* who are eligible for treatment*	Year (H)	I. Number of people ever diagnosed with chronic HBV infection (HBsAg) and eligible for treatment from a clinical perspective* receiving antiviral treatment during 2020*	Year (I)	I/H (%) Proportion of people treated of those diagnosed and eligible
Austria	-	-	-	-	-	-	-	-	-	
Belgium	-	-	-	-	-	-	-	**2 485**	2019	
Bulgaria	-	-	-	-	-	**2 887**	2020	**-**	-	-
Croatia	-	-	-	-	-	**-**	-	**-**	-	-
Cyprus	-	-	-	-	-	**-**	-	**-**	-	-
Czechia	-	-	-	-	-	**-**	-	**-**	-	-
Denmark	***3 296***	***2016***	***46.3***	***2 686***	***2016***			***610***	***2016***	
Estonia	**-**	-	-	**-**	-	**-**	-	**-**	-	-
Finland	**-**	-	-	**-**	-	**-**	-	**-**	-	-
France	**-**	-	-	**-**	-	**-**	-	**-**	-	-
Germany	**-**	-	-	**-**	-	**-**	-	**26 035**	2008-2020	-
Greece	**-**	-	-	**-**	-	**-**	-	**-**	-	-
Hungary	**-**	-	-	**-**	-	**-**	-	**-**	-	-
Iceland	**-**	-	-	**-**	-	**-**	-	**-**	-	-
Ireland	**-**	-	-	**-**	-	**-**	-	**-**	-	-
Italy	**-**	-	-	**-**	-	**-**	-	**-**	-	-
Latvia	1 467	2017	6.1	**-**	-	**-**	-	***320***	***2020***	-
Liechtenstein	**-**	-	-	**-**	-	**-**	-	**-**	-	-

Lithuania	**-**	-	-	**-**	-	**-**	-	**-**	-	-
Luxembourg	**-**	-	-	**-**	-	**-**	-	**-**	-	-
Malta	**-**	-	-	**-**	-	**-**	-	**-**	-	-
Netherlands	**-**	-	-	**-**	-	**-**	-	**4 750**	2020	-
Norway	**-**	-	-	**-**	-	**-**	-	**-**	-	-
Poland	**26481**	2020	23.0	**-**	-	**-**	-	**8 833**	2020	-
Portugal	**-**	-	-	**-**	-	**-**	-	**-**	-	-
Romania	**2 246**	2020		**100 000**	2020	**20 500**	2020	**2 246**	2020	11.0
Slovakia	**-**	-	-	**-**	-	**-**	-	**-**	-	-
Slovenia	**1 493**	2020	-	**692**	2020	**801**	2020	**801**	2020	100
Spain	-	-	-	-	-	-	-	-	-	-
Sweden	-	-	-	-	-	-	-	-	-	-

** 2020 or the most recent year with data*
All geographic coverage is at the national level unless otherwise specified. Subnational data (at the regional, city, or clinic level) are reported in these tables, but were not used in the graphs and data presented in the body of the report. Data in red italics are subnational, at the regional level. Estimates/data in bold have been updated since the 2018 survey. Blue column headings are calculated indicators. Population data are from EuroStat.
Denmark: subnational data from the west of Denmark (Regions: north, central and couth) were scaled up to the national level.
Latvia: subnational data are at the clinic level (Riga East University Hospital).

Table 4A. HBV infection viral suppression

Country	J. Number of people receiving antiviral treatment for chronic HBV infection (HBsAg) who have achieved viral suppression during 2020*	K. Number of people ever diagnosed with chronic HBV infection (HBsAg) and eligible for treatment receiving antiviral treatment during 2020*, with documentation of treatment outcome	Year (J and K)	J/K (%) Proportion with viral suppression of those treated
Austria	-	-	-	-
Belgium	-	-	-	-
Bulgaria	-	-	-	-
Croatia	-	-	-	-
Cyprus	-		-	-
Czechia	-	-	-	-
Denmark	*107*	*154*	*2016*	*69.5*
Estonia	-	-	-	-
Finland	-	-	-	-
France	-	-	-	-
Germany	-	--	-	-
Greece	-	-	-	-
Hungary	-	-	-	-
Iceland	-	-	-	-
Ireland	-	-	-	-
Italy	-	-	-	-
Latvia	-	-	-	-
Liechtenstein	-	-	-	-
Lithuania	-	-	-	-
Luxembourg	-	-	-	-
Malta	-	-	-	-
Netherlands	-	-	-	-
Norway	-	-	-	-
Poland	-	-	-	-
Portugal	-	-	-	-
Romania	**1 960**	**1 960**	2020	100
Slovakia	**-**	**-**	-	-
Slovenia	**801**	**801**	2020	100
Spain	-	-	-	-
Sweden	-	-	-	-

** 2020 or the most recent year with data*
All geographic coverage is at the national level unless otherwise specified. Subnational data (at the regional, city, or clinic level) are reported in these tables, but were not used in the graphs and data presented in the body of the report. Data in red italics are subnational, at the regional level. Estimates/data in bold have been updated since the 2018 survey. Blue column headings are calculated indicators. Population data are from EuroStat.
Denmark: Subnational data from the west of Denmark (Regions: north, central and south) were scaled up to the national level.

Annex 2. Data on the hepatitis C continuum of care

Table 5A. Number of people living with chronic HCV infection

Country	Population	A. Estimated number of people living with current chronic HCV infection (RNA positive), diagnosed and undiagnosed, by the end of 2020*	Year (A)	A per 100 000 population	B. Estimated number of people ever infected with HCV infection (anti-HCV positive), diagnosed and undiagnosed, by the end of 2020*	Year (B)	B per 100 000 population
Austria	8 901 064	-	-	-	-	-	-
Belgium	11 522 440	**18 800**	2014-2020	163.2	**25 000**	2014	217.0
Bulgaria	6 951 482	-	-	-	-	-	-
Croatia	4 058 165	**20 000**	2018	492.8	**40 000**	2013	985.7
Cyprus	888 005	-	-	-	-	-	-
Czechia	10 693 939	***60 000***	-	-	-	-	-
Denmark	5 822 763	-	-	-	9 975	2016	171.3
Estonia	1 328 976	-	-	-	-	-	-
Finland	5 525 292	-	-	-	-	-	-
France	67 320 216	133 466	2016	198.3	**344 500**	2011	511.7
Germany	83 166 711	**254 000**	2013	305.4	**307 000**	2013	369.1
Greece	10 718 565	**75 000**	2015-2018	699.7	100 000	2015-2016	933.0
Hungary	9 769 526	-	-	-	-	-	-
Iceland	364 134	**88**	2020	24.2	**1 501**	2019	412.2
Ireland	4 964 440	**9 000**	2020	181.3	**33 708**	Mixed	679.0
Italy	59 641 488	**410 775**	2019	688.7	**534 007**	2019	895.4
Latvia	1 907 675	**46 000**	2010	2 411.3	-	-	-
Liechtenstein	38 747	-	-	-	-	-	-
Lithuania	2 794 090	-	-	-	-	-	-
Luxembourg	626 108	-	-	-	-	-	-
Malta	514 564	-	-	-	-	-	-
Netherlands	17 407 585	23 000	2016	132.1	-	-	-
Norway	5 367 580	-	-	-	-	-	-
Poland	37 958 138	165 000	2013-2016	434.7	**349 650**	2013-2016	921.1
Portugal	10 295 909	~30 000	2017	300	~150 000	2001	1 500
Romania	19 328 838	**261 119**	2016	1 350.9	**663 981**	2016	3 435.2
Slovakia	5 457 873	-	-	-	-	-	-
Slovenia	2 095 861	**1 677**	2020	80.0	-	-	-
Spain	47 332 614	**76 839**	2017-2018	162.3	**337 107**	2017-2018	712.2
Sweden	10 327 589	**29 700**	2019	287.6	-	-	-

** 2020 or the most recent year with data*
All geographic coverage is at the national level unless otherwise specified. Subnational data (at the regional, city, or clinic level) are reported in these tables, but were not used in the graphs and data presented in the body of the report. Data in red italics are subnational, with descriptions of the geographical coverage below the table. Estimates/data in bold have been updated since the 2018 survey. Blue column headings are calculated indicators. Population data are from EuroStat.
Czechia: subnational data are at the city level (Prague and Brno).
Poland: data refer to the adult population only.

Table 6A. HCV infection diagnosis

Country	C. Number of people ever diagnosed with chronic HCV infection (HCV RNA) by the end of 2020*	Year (C, D, E)	C per 100 000 population	D. Number of people ever diagnosed with chronic HCV infection (HCV RNA) by the end of 2020*, excluding those with resolved infection or who have died:	(A-D) per 100 000: those remaining undiagnosed	E. Number of people diagnosed with chronic HCV infection (HCV RNA) during 2020*	E per 100 000 population	F. % of people with chronic hepatitis C who have decompensated cirrhosis and/or HCC at the time of diagnosis	G. Number of people tested for hepatitis C (anti-HCV) in 2020*	Year (G)	Number of people tested for hepatitis C (anti-HCV) in 2018
Austria	-	2020	-	-	-	**839**	9.4	-		-	-
Belgium	-	-	-	-	-	-	-	-	-	-	700 000
Bulgaria	-	2020	-	-	-	**810**	11.7	-	-	-	-
Croatia	**8 000**	2020	197.1	-	-	**206**	5.1	-	-		-
Cyprus	-	-	-	-	-	-	-	-	-	-	-
Czechia	-	2020	-	-	-	**771**	7.2	-	-	-	-
Denmark	**7 581**	2016	130.2	**7 581**	-	**300**	5.2	13	-	-	-
Estonia	**-**	-	-	**-**	-	-	-	-	-	-	-
Finland	**-**	-	-	**-**	-	-	-	-	-	-	-
France	**-**	2016	-	**107 574**	38.5	-	-	-	-	-	4 100 000
Germany	**-**	2020	-	**-**	-	**4 188**	5.0	2-34% cirrhosis; 1.2% HCC	-	-	-
Greece	**35 000**	2015-2018	326.5	**10 000**	606.4	-	-	-	-	-	-
Hungary	**-**	-	-	-	-	-	-	-	-	-	-
Iceland	**-**	-	-	-	-	-	-	-	-	-	-
Ireland	**15 000**	2020	302.1	**6 000**	60.4	**326**	6.6	-	-	-	123 309
Italy	**346 364**	2019-2020	580.7	**300 000**	185.7	-	-	-	-	-	-
Latvia	**25 000**	2020	1 310.5	-	-	**1 139**	59.7	-	-	-	53 288
Liechtenstein	**-**	-	-	-	-	-	-	-	-	-	-
Lithuania	**-**	-	-	-	-	-	-	-	-	-	-
Luxembourg	**-**	-	-	-	-	-	-	-	-	-	53 429
Malta	**1 300**	2018	252.6	-	-	-	-	-	-	-	-
Netherlands	**18 400**	2020	105.7	**3 700**	110.9	**384**	2.2	-	-	-	-

Norway	**-**	-	-	-		-	-	-	-	-	-
Poland	**37 125**	2016; 2020	97.8	-	-	**955**	2.5	4.5	**310 107**	2020	-
Portugal	**150 000**	2020	1 456.9	**100 000**	-	**300**	2.9	-	**351 413**	2020	337 040
Romania	**-**	2020	-	**42 560**	1 130.7	**6 900**	35.7	25	**518 675**	2020	523 043
Slovakia	**-**	-	-	-	-	-	-	-	-	-	-
Slovenia	**4 049**	1997-2020	193.2	**1 172**	-	**82**	3.9	-	-	-	-
Spain	**54 361**	2017-2018	114.8	-	-	-	-	***27.2% cirrhosis/HCC***	-	-	-
Sweden	-	-	-	**-**	-	**614**	5.9	-	-	-	-

** 2020 or the most recent year with data*
All geographic coverage is at the national level unless otherwise specified. Subnational data (at the regional, city, or clinic level) are reported in these tables, but were not used in the graphs and data presented in the body of the report. Data in red italics are subnational, with descriptions of the geographical coverage below the table. Estimates/data in bold have been updated since the 2018 survey. Blue column headings are calculated indicators. Population data are from EuroStat.
Data from Spain are regional data.
Poland: estimates for numbers diagnosed refer to the adult population only.

Table 7A. HCV infection treatment

Country	I. Number of people with chronic HCV infection (HCV RNA) who have ever been treated by the end of 2020*	Year (I)	I per 100 000 population	I/C (%)	J. Number of people with chronic HCV infection (HCV RNA) who received antiviral treatment during 2020*	Year (J)	J/D (%)
Austria	**10 444**	2020	117.3	-	**1 103**	2020	-
Belgium	**-**	-	-	-	**960**	2020	-
Bulgaria	**-**	-	-	-	-	-	-
Croatia	**8 000**	2021	197.1	100	**350**	2021	-
Cyprus	**-**		-	-	-	-	-
Czechia	**-**	-	-	-	-	-	-
Denmark	***6 934***	***2020***	***119.1***	***91.5***	***736***	***2020***	***9.7***
Estonia	**-**	-	-	-	-		-
Finland	**-**	-	-	-	**1 964**	2020	-
France	**73 000**	2014-2018	108.4	-	**16 117**	2016	15.0
Germany	**76 400**	2014-2020	91.9	-	**6 500**	2020	-
Greece	**25 000**		233.2	71.4	**1 271**	2020	12.7
Hungary	**-**	-	-	-	-	-	-
Iceland	**-**	-	-	-	-	-	-
Ireland	**7 000**	2020	141.0	46.7	**542**	2020	9.0
Italy	**217 398**	2020	364.5	62.8	**15 435**	2020	5.1
Latvia	**9 500**	2016-2020	498.0	38.0	**2 640**	2020	-
Liechtenstein	**-**	-	-	-	-	-	-
Lithuania	**-**	-	-	-	-	-	-
Luxembourg	**-**	-	-	-	-	-	-
Malta	**-**	-	-	-	**199**	2019	-
Netherlands	**7 964**	2014-2020	45.8	43.3	**512**	2020	13.8
Norway	**17 014**	-	317.0	-	**1 364**	2020	-
Poland	**-**		-	-	**6 748**	2020	-
Portugal	**27 038**	2021	262.6	18.0	**2 311**	2020	2.3
Romania	**137 760**	2020	712.7	-	**6 900**	2020	16.2
Slovakia	**-**	-	-	-	**-**	-	-
Slovenia	**2 823**	1997-2020	134.7	69.7	**104**	2020	8.9
Spain	**146 668**	2015-2020	309.9	-	**8 440**	2020	
Sweden	**-**	-	-	-	**4 800**	2019	-

** 2020 or the most recent year with data*
All geographic coverage is at the national level unless otherwise specified. Subnational data (at the regional, city, or clinic level) are reported in these tables, but were not used in the graphs and data presented in the body of the report. Data in red italics are subnational, with descriptions of the geographical coverage below the table. Estimates/data in bold have been updated since the 2018 survey. Blue column headings are calculated indicators. Population data are from EuroStat.
Austria: data on cases ever treated are from 2014 to 2020.
Denmark: Data from the west of Denmark (Regions: north, central and south) were scaled up to the national level.

Table 8A. HCV infection sustained virologic response

Country	K. Number of people who received antiviral treatment for HCV infection who achieved sustained virologic response during 2020*	Year (K)	L. Number of people who received antiviral treatment for HCV during 2020*, with documentation of treatment outcome	Year (L)	K/L (%) Proportion with sustained virological response of those treated
Austria	-	-	-	-	-
Belgium	-	-	-	-	-
Bulgaria	-	-	-	-	-
Croatia	**345**	2018	**350**	2021	98.6
Cyprus	**-**	-	**-**	-	-
Czechia	**-**	-	**-**	-	-
Denmark	***399***	***2020***	***409***	***2020***	***97.6***
Estonia	-	-	**-**	-	-
Finland	-	-	**1 900**	2020	-
France	-	-	-	-	-
Germany	-	-	-	-	-
Greece	-	-	-	-	98.0
Hungary	-		-	-	-
Iceland	190	2018	-	-	-
Ireland	**332**	2020	**347**	2020	95.7
Italy	-				
Latvia	**1 019**	2020	**1 069**	2020	95.3
Liechtenstein	-	-	-	-	-
Lithuania	-	-	-	-	-
Luxembourg	-	-	-	-	-
Malta	**146**	2019	**154**	2019	94.8
Netherlands	-	-	-	-	-
Norway	-	-	-	-	-
Poland	-	-	-	-	-
Portugal	2 732	2017	**2 822**	2017	96.8
Romania	**6 486**	2020	**6 900**	2020	94.0
Slovakia	-	-	-	-	-
Slovenia	**214**	2019	**216**	2019	99.1
Spain	**36 694**	2015-2019	**38 626**	2015-2019	95.0
Sweden	1 451	2020	**2 253**	2020	64.4

HCC: Hepatocellular carcinoma
** 2020 or the most recent year with data*
All geographic coverage is at the national level unless otherwise specified. Subnational data (at the regional, city, or clinic level) are reported in these tables, but were not used in the graphs and data presented in the body of the report. Data in red italics are subnational, with descriptions of the geographical coverage below the table. Estimates/data in bold have been updated since the 2018 survey. Blue column headings are calculated indicators. Population data are from EuroStat.
Data from the west of Denmark (Regions: north, central, and south) were scaled up to the national level.

ISBN 978-92-9498-574-3

European Centre for Disease Prevention and Control (ECDC)

Gustav III:s Boulevard 40, 16973 Solna, Sweden

Tel. +46 858601000
Fax +46 858601001
www.ecdc.europa.eu

An agency of the European Union
www.europa.eu

Subscribe to our publications
www.ecdc.europa.eu/en/publications

Contact us
publications@ecdc.europa.eu

Follow us on Twitter
@ECDC_EU

Like our Facebook page
www.facebook.com/ECDC.EU

ECDC is committed to ensuring the transparency and independence of its work

In accordance with the *Staff Regulations for Officials and Conditions of Employment of Other Servants of the European Union* and the *ECDC Independence Policy*, ECDC staff members shall not, in the performance of their duties, deal with matters in which they may, directly or indirectly, have a personal interest that could impair their independence. Declarations of interest must be received from any prospective contractor before a contract can be awarded.
www.ecdc.europa.eu/en/aboutus/transparency

Publications Office of the European Union

ISBN 978-92-9498-574-3