Hepatitis C in England 2022

Working to eliminate hepatitis C as a public health problem

Full report

Data to end of December 2020
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Foreword

The number of people living with chronic hepatitis C virus (HCV) infection in England has fallen dramatically, by 37% since 2015, to 81,000 in 2020, with many of those drawn from marginalised and underserved groups in society, such as people who inject drugs (PWID) (1). In this report, we present the latest data on HCV, review progress towards World Health Organization (WHO) elimination targets, and highlight the actions needed to reach them.

In response to publication by the WHO of their interim guidance to validate each country’s stage of viral hepatitis elimination (2), absolute impact targets for HCV-related mortality have been included, along with metrics to measure reductions in chronic HCV prevalence in the general population, and among PWID, as proxy measures for changes in HCV incidence. Improvements in monitoring have been made over the last year, despite the coronavirus (COVID-19) pandemic, with the introduction of a new indicator to monitor HCV reinfection following treatment and with further development of the HCV data dashboard and care pathway.

The substantial fall in numbers of people with chronic HCV infection is largely due to improved access to direct-acting antivirals, with around 58,850 treatments taking place between tax years 2015 to 2016 and 2020 to 2021.

We should also be encouraged by the incredible progress that has been made in reducing HCV-related mortality by 35% since 2015, exceeding the 2020 WHO target of a 10% reduction (3). Indeed, in England we have already met the WHO 2030 interim target (2) of achieving an HCV-related annual mortality rate below 2 per 100,000.

Nonetheless, there are worrying signals that prevention may be failing to keep pace with the gains made in other areas, with the number of new infections, and reinfections following treatment, posing a threat to England meeting WHO incidence targets (2, 3). With injecting drug use the main driver of HCV transmission in England, a significant proportion of PWID remain unaware of their HCV infections, needle and syringe provision is suboptimal and sharing injecting equipment remains a problem. There also remains a substantial proportion of infections in those who were at risk for exposure to infection in the past but who may no longer be in contact with services that would normally offer them HCV testing.

During the COVID-19 pandemic, people in all sectors have worked collaboratively and creatively to continue to provide treatment services for patients with HCV and to offer testing to those at risk of infection. I congratulate them for their efforts during these times, rising to the challenges caused by implementation of social distancing and other COVID-19 related service disruption.

In the coming year, the challenges of the COVID-19 pandemic may continue to threaten the progress of our HCV elimination efforts both in England and abroad, so we must not lose
focus on recovery. It will be even more important to sustain and strengthen those actions needed to reduce incidence, increase testing, and improve linkage into care if we are to meet WHO goals to eliminate HCV as a major public health threat.

Director Public Health Programmes and Head of Immunisation
UK Health Security Agency
## Glossary of acronyms and abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Meaning</th>
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<tr>
<td>Anti-HCV</td>
<td>Hepatitis C antibodies</td>
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<td>BBV</td>
<td>Bloodborne virus</td>
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<tr>
<td>CI</td>
<td>Confidence Interval</td>
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<tr>
<td>COVID-19</td>
<td>Coronavirus 19 disease</td>
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<td>CrI</td>
<td>Credible interval</td>
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<tr>
<td>DAA</td>
<td>Direct-acting antiviral</td>
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<tr>
<td>DBS</td>
<td>Dried blood spot</td>
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<tr>
<td>ECDC</td>
<td>European Centre for Disease Prevention and Control</td>
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<tr>
<td>ESLD</td>
<td>End-stage liver disease</td>
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<tr>
<td>EU</td>
<td>European Union</td>
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<tr>
<td>GBM</td>
<td>Gay, bisexual or other men who have sex with men</td>
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<td>GHSS</td>
<td>Global Health Sector Strategy</td>
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<tr>
<td>GP</td>
<td>General Practitioner</td>
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<tr>
<td>GUMCAD</td>
<td>GUMCAD STI Surveillance System</td>
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<tr>
<td>HARS</td>
<td>HIV and AIDS Reporting System</td>
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<td>HBV</td>
<td>Hepatitis B virus</td>
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<td>HCC</td>
<td>Hepatocellular carcinoma</td>
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<tr>
<td>NHS England Registry</td>
<td>NHS England Hepatitis C Patient Registry and Treatment Outcome System</td>
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<td>HCV</td>
<td>Hepatitis C virus</td>
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<td>HCVcAg</td>
<td>HCV core antigen</td>
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<td>HES</td>
<td>Hospital episode statistics</td>
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<td>HITT</td>
<td>High intensity test and treat</td>
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<td>HIV</td>
<td>Human immunodeficieny virus</td>
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<td>HJIP</td>
<td>Health and Justice Indicators of Performance</td>
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<td>HJIS</td>
<td>Health and Justice Information System</td>
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<td>H&amp;J SRU</td>
<td>Health and Justice Strategic Reporting Unit</td>
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<td>HMPPS</td>
<td>Her Majesty’s Prison and Probation Service</td>
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<td>HPRU</td>
<td>Health Protection Research Units</td>
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<td>IPED</td>
<td>Image and performance enhancing drugs</td>
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<td>LDSS</td>
<td>Low dead space syringe</td>
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<tr>
<td>Abbreviation</td>
<td>Meaning</td>
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<tr>
<td>MSM</td>
<td>Men who have sex with men</td>
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<td>NAT</td>
<td>Nucleic acid test</td>
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<tr>
<td>NDTMS</td>
<td>National Drug Treatment Monitoring System</td>
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<tr>
<td>NECS</td>
<td>North of England Commissioning Support</td>
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<tr>
<td>NFA</td>
<td>No fixed abode</td>
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<tr>
<td>NHS</td>
<td>National Health Service</td>
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<tr>
<td>NHSBT</td>
<td>NHS Blood and Transplant</td>
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<tr>
<td>NICE</td>
<td>National Institute for Health and Care Excellence</td>
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<td>NIHR</td>
<td>National Institute for Health Research</td>
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<tr>
<td>NSGVH</td>
<td>National Strategic Group for Viral Hepatitis</td>
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<tr>
<td>NSP</td>
<td>Needle and syringe programme</td>
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<tr>
<td>ODN</td>
<td>Operational delivery network</td>
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<tr>
<td>OHID</td>
<td>Office for Health Improvement and Disparities</td>
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<td>ONS</td>
<td>Office for National Statistics</td>
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<tr>
<td>OST</td>
<td>Opioid substitution treatment</td>
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<td>PHE</td>
<td>Public Health England</td>
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<td>PHPQIs</td>
<td>Prison Health Performance and Quality Indicators</td>
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<td>PPG</td>
<td>Practice Plus Group</td>
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<tr>
<td>PrEP</td>
<td>Pre-exposure prophylaxis</td>
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<tr>
<td>PWID</td>
<td>People who inject drugs</td>
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<tr>
<td>RCGP</td>
<td>Royal College of General Practitioners</td>
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<tr>
<td>RNA</td>
<td>Ribonucleic acid</td>
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<td>SD</td>
<td>Standard deviation</td>
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<tr>
<td>SGSS</td>
<td>Second Generation Surveillance System</td>
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<tr>
<td>SSBBV</td>
<td>Sentinel Surveillance of Bloodborne Viruses</td>
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<tr>
<td>STI</td>
<td>Sexually transmitted infection</td>
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<tr>
<td>SHS</td>
<td>Sexual health services</td>
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<tr>
<td>SVR</td>
<td>Sustained virological response</td>
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<tr>
<td>TasP</td>
<td>Treatment as prevention</td>
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<tr>
<td>UAM</td>
<td>Unlinked Anonymous Monitoring</td>
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<tr>
<td>UK</td>
<td>United Kingdom</td>
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<tr>
<td>UKHSA</td>
<td>United Kingdom Health Security Agency</td>
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<tr>
<td>WHO</td>
<td>World Health Organization</td>
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- GUMCAD sexually transmitted infection (STI) Surveillance system (GUMCAD)
- NHS Blood and Transplant (NHSBT)
- Hospital Episode Statistics (HES) (copyright © 2022, re-used with the permission of NHS Digital, all rights reserved)
- NHS England and Arden and Greater East Midlands Commissioning Support Unit
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Executive summary

This report summarises the scale of HCV infection and related disease in England up to the end of 2020 and presents data that allows monitoring of progress against WHO elimination targets, to identify where focused action is needed to eliminate HCV as a major public health problem by 2030 at the latest, and to ensure sustained elimination post-2030.

Prevalence of chronic HCV infection in England has continued to decline

Latest modelled estimates suggest that in 2020, around 81,000 (95% credible interval (CrI) 66,000 to 94,000) people in England were living with chronic HCV infection, falling from 129,000 people (95% CrI 114,000 to 143,000) in 2015 (1). Of the 81,000 people living with chronic HCV, modelling suggests that 27% of these infections are in current or recent PWID; 62% are in those with a past drug injecting history but who are no longer injecting; and 11% are in those with no history of injecting. To help inform and tackle levels of undiagnosed HCV infection in those who never have, or who no longer, inject drugs, NHS England has a programme of work to investigate levels of HCV infection in primary care populations and to work with partners to re-assess the feasibility of opt-out antenatal HCV testing in England.

Data suggests the prevalence of chronic HCV infection in PWID to be 17.3% in 2020 (23.8% in 2019; 28.7% in 2015) (1), although 2020 data is provisional given the difference in geographical distribution of samples collected in 2020 during the COVID-19 pandemic, the change in risk profile of participants, and the smaller sample size (4). Increases in those ever infected with HCV combined with recent decreases in chronic HCV infection among PWID between 2015 and 2020, suggest that increased access to treatment, rather than improved harm reduction, is the main driver of the reduction in prevalence of chronic HCV infection among PWID.

Monitoring progress towards the WHO impact target to reduce the incidence of HCV infection remains a challenge

Recognising the challenge in measuring incidence, the WHO have proposed a proxy measure: a reduction in HCV viraemia prevalence of 80% from the 2015 baseline (in the general population and among PWID) (2). Latest modelled estimates suggest a decrease in prevalence of HCV infection among the general population of 37% between 2015 and 2020. Among PWID, a relative percentage fall in prevalence of chronic HCV infection of 39.7% was observed between 2015 and 2020 (1).
Other bio-behavioural data on recent transmission of HCV and prevalence of infection in recent initiates to injecting drug use (another proxy indicator of incidence) from the UAM Survey currently provides little convincing evidence of a fall in HCV incidence since 2015. This provides further support for the view that falls in chronic HCV prevalence among PWID are more likely to be the result of increased HCV treatment rather than improved prevention of infections due to improved harm reduction; studies suggest that both are needed for elimination (5).

Preliminary estimates of reinfection following treatment using linked national testing and treatment surveillance data suggest conservative reinfection rates of 8.1% in England, which are higher among those with a known history of injecting drug use (10.9%).

**England has surpassed WHO impact targets on reducing HCV-related mortality**

The WHO Global Health Sector Strategy (GHSS) impact targets for HCV-related mortality require a reduction of 10% by 2020 and of 65% by 2030 (3). WHO interim guidance proposes a reduction to an annual absolute HCV-related mortality rate of less than or equal to 2 per 100,000 persons for validation of elimination (2).

The 2016 GHSS WHO target of a 10% reduction in HCV mortality by 2020 has been exceeded three-fold in England (35% reduction by 2020). Substantial progress has also been made towards the 2030 target of a 65% reduction in HCV-related deaths, where hitting the target would be represented by a fall in HCV deaths from 482 in 2015 to 169 in 2030 (the current trajectory predicts 133 deaths in 2030), or to 192 deaths if the WHO definition of HCV-related deaths is used, with the current trajectory predicting 157 deaths in 2030).

In 2020, rates of HCV-related deaths in England were 0.56 per 100,000 (1) (0.64 per 100,000 if the WHO definition of HCV-related deaths is used), which confirm that the WHO interim validation of elimination metric to achieve an HCV-related annual mortality rate of less than or equal to 2 per 100,000, has already been met in England.

**There has been good progress reducing the prevalence of other HCV-related morbidity**

In 2020, HES data suggests there were 415 and 1,297 first presentations of HCV-related hepatocellular carcinoma (HCC) and HCV-related end-stage liver disease (ESLD) respectively (1,505 people with either or both HCC/ESLD) (1). This represents a reduction on the 2015 WHO baseline year (21.8% below for HCV-related HCC; 16.6% below for HCV-related ESLD, and 17.3% below for HCV-related HCC/ESLD), suggesting that HCV direct-acting antiviral (DAA) treatment is averting new cases of HCV-related severe liver disease (1).
In 2020, there were 49 first liver transplant registrations with post-HCV cirrhosis, a 40.2% fall from 82 in the 2015 baseline year (1). Likewise, first liver transplants undertaken for these indications declined by 52.9% to 40 in 2020 from 85 in the 2015 baseline year. The proportion of all first liver transplants performed in England that were carried out in patients with HCV-related disease in 2020 (40 out of 656; 6.1%) is now half that in the 2015 baseline year (85 out of 704; 12.1%) (1).

The proportion of people with chronic HCV diagnosed (WHO programme target) and aware of their infection is sub-optimal

More needs to be done to raise awareness of infection, including in those groups who are not in contact with services that would routinely offer HCV testing.

The WHO propose that at least 90% of people should be aware of their chronic HCV infection by 2030 (2). In 2020, 40.4% of PWID sampled in the UAM Survey were aware of their current chronic infection (33.9% in 2019), a reduction from that seen in 2017 when this data was first available (58.2%) (1). The lower levels of awareness in 2019 and 2020 may be a result of increased UAM Survey recruitment through outreach services, compared to traditional recruitment through services offered at the drug service building. Participants recruited through outreach may have been less likely to be engaged with drug services, and thus less likely to be aware of their current HCV infection.

Furthermore, as the majority were recruited through outreach bloodborne virus (BBV) testing, they may have been tested for HCV alongside the UAM but not received their test results at the time of questionnaire completion, leading to underestimation of levels of awareness. This is supported by National Drug Treatment Monitoring System (NDTMS) data which suggests higher levels of awareness among people who have ever injected drugs newly presenting to drug or alcohol treatment in England in tax year 2019 to 2020 who had received an HCV test – 45.9% reported knowing their HCV ribonucleic acid (RNA) status, of whom 23.5% reported they were chronically infected with HCV.

In partnership with stakeholders, a variety of initiatives and resources have, or are being, developed to help raise awareness of HCV and increase the numbers diagnosed, including through improved case finding and testing in both the wider population and among risk groups.
Harm reduction in PWID (WHO programme targets) needs to be scaled up to prevent primary infection and reinfection following HCV treatment

Early data shows that the WHO European region target for at least 40% of opioid dependent PWID to be receiving opioid substitution treatment (OST) by 2020 (6) has been met in England (55.5% in tax year 2011 to 2012) (1, 7), although updated estimates are awaited to confirm that this remains the case.

There is no evidence of any fall in sharing of injecting equipment over the last decade, with a suggestion that sharing may have risen during the COVID-19 pandemic. UAM Survey data suggests that 24.1% of participants in 2020 who reported currently injecting psychoactive drugs in the last month reported direct sharing of needles and syringes (20.4% in 2019). When including the sharing of mixing containers or filters as well as needles and syringes, the proportion of those reporting direct and indirect sharing in 2020 was 42.8% (36.3% in 2019) (1).

While evidence shows that the majority of PWID may be able to access needle and syringe programmes (NSP) to some degree, current provision is sub-optimal with around 2 in 3 reporting adequate provision for their needs (62.7% in 2020, and 66.1% in 2019). In 2019, UAM Survey data suggests that only around 3 in 5 of responding sites provided low dead space syringes (LDSS) (58.6%). There is a paucity of evidence of NSP coverage through alternative NSP routes, such as pharmacy NSP.

Staff at UAM Survey sites responding to a survey in September 2020, did not report a significant drop in NSP and OST provision, and two-thirds of sites (66.7%) said they had adopted novel approaches to NSP delivery (for example, home delivery, provision by post, and peer supported distribution) during COVID-19 lockdown. However, provisional UAM Survey findings indicate that one in 4 PWID found it more difficult to access injecting equipment in 2020, during the COVID pandemic, than in 2019.

Data suggests that the 2020 WHO European region target – that at least 90% of PWID should be receiving targeted HCV information, education, and communications (6) – has been marginally missed in England. Data from the UAM Survey suggests that around one in 4 of respondents reported that they had not received any information in the last year that explained what HCV is, how they could avoid catching it, or how it is treated (75.8% reported receiving this information in 2020, and 79.9% in 2019).
Much progress has been made to increase the numbers accessing HCV testing, but access was impacted by the COVID-19 pandemic; testing is beginning to recover but a redoubling of effort is required

Between 2010 and 2019, there has been a more than 90% increase in the number of individuals with new laboratory confirmed diagnoses of HCV infection in England to 15,848 reports in 2019. A decrease of 33.3% was observed to 10,563 reports in 2020, likely due to COVID-19 restrictions. Of all laboratory reports between 2010 to 2020, 69.8% were in men and just under half (46.2%) were in individuals aged between 30 and 44 years. Since 2017 more than 30% of laboratory reports are from testing dried blood spot (DBS) samples.

In primary care data from SSBBV testing indicate that HCV testing increased by 43.3% (and by 60.7% in England overall) between 2015 and 2019, with a sharp fall of around 34 to 36% in 2020, likely due to COVID-19 restrictions. Between 2015 and 2020, anti-HCV test positivity remained relatively stable in the wider population at around 3% and at around 2% in those tested via primary care. Data shows that in 2020 around one in 7 people testing anti-HCV positive in sentinel surveillance had no subsequent HCV RNA test recorded, and among those who did, one in 5 had their HCV RNA test recorded more than one week after HCV antibody testing, suggesting that reflex testing had not taken place using the initial sample.

In drug services, data from the UAM Survey (2020) and the NDTMS (tax year 2019 to 2020) shows that around 85% of PWID report ever having had an HCV antibody test. Sentinel surveillance shows that HCV testing in drug services more than doubled between 2015 and 2019 (102.1% increase), and NHS England elimination initiatives aimed at this important risk group are likely to have contributed to this increase. In 2020, a considerable decrease in HCV testing of 61.7% was observed, a proportion of which is likely due to COVID-19 restrictions. Data shows that around one in 5 individuals tested anti-HCV positive (between 2015 to 2019), and the proportion testing positive rose to one in 4 in 2020 suggesting more targeted testing of those at greater risk of infection during the COVID-19 pandemic.

NDTMS data also shows that HCV testing is increasing among all people who attend drug and alcohol services (rising from 43.2% in tax year 2009 to 2010 to 68.0% in tax year 2019 to 2020) but at a reduced rate in those newly presenting for treatment (rising from 37.1% in tax year 2009 to 2010 to 52.2% in tax year 2019 to 2020). HCV testing levels are higher overall in those who report an injecting risk (85.7% in tax year 2019 to 2020), as expected when most current testing practice is risk-based. NDTMS data shows that more than 4 in 5 people are offered HCV testing. The higher levels of test acceptance observed in those with an injecting risk (63.4% vs 55.2% among all adults in drug and alcohol treatment services) suggest that
service users are aware of the increased risk of acquiring HCV with injecting drugs. UAM Survey data for 2020 suggests that 31.4% of people reported having their most recent HCV test outside drug services (18.6% via prison healthcare, and 7.5% via their general practitioner (GP), a proportion of which will be driven by requests from other services through shared care).

NHS England elimination initiatives are in place involving the whole criminal justice pathway, including probation, with a significant programme of work in prisons. This involves whole population high-intensity test and treat (HITT) sessions in both settings and ensuring robust reception BBV opt-out testing policies are implemented across the English prison estate. In secure and detained settings such as prisons and immigration centres, data from the Health and Justice Strategic Reporting Unit (H&J SRU) and SSBBV testing both show an increased awareness of HCV across secure and detained settings, with sentinel surveillance showing a more than 6-fold increase (up 626.6%) in HCV testing between 2015 and 2019. In 2020 there was a fall in HCV testing, likely due to COVID-19 restrictions. Data shows that levels of testing of new receptions remains sub-optimal with around 2 in 5 getting tested for anti-HCV within 14 days of reception in tax years 2019 to 2020 and 2020 to 2021, although levels of offer and uptake of HCV testing varied across the prison estate. The proportion testing anti-HCV positive is lower than in previous years (8) at around 4% in 2020 to tax year 2020 to 2021 as expected with the expansion of testing leading to more generalised rather than risk-based targeted testing. HITT initiatives may also be starting to drive HCV infection down in the prison estate.

HCV infections among people experiencing homelessness represent a decreased proportion of all laboratory reports of HCV infection in 2020 (3.2% in 2020, compared to an average of 6.8% in 2014 to 2019). Latest data suggests levels of reported diagnosed HCV infection to be 25.4% in 2020 among people who sleep rough. Provisional 2020 data in the UAM Survey indicates levels of chronic HCV infection fell to 21% among PWID who report currently experiencing homelessness (equal to or more than 30% in 2015 to 2019).

HCV testing increased between 2015 and 2019 by 66.0% in South Asian populations and by 103.4% in Eastern European populations, with sharp falls in testing in 2020 of around 30 to 35%, likely due to COVID-19 pandemic restrictions. The proportion testing positive fell to 1.0% in South Asian populations and to 3.1% in populations from Eastern Europe in 2020. Higher levels of infection in these populations are confirmed by 2020 data from the joint NHS Blood and Transplant (NHSBT) and UKHSA Epidemiology Unit, which shows rates of confirmed anti-HCV positive donations to be 6 times higher among donors of South Asian ethnicity (76.4 per 100,000 new South Asian donors) and 5 times higher among donors of White ethnicity who were not White British or Irish (67.6 per 100,000 new other White donors) than among donors of White British ethnicity (12.4 per 100,000 new White British donors).

Among sentinel sexual health services (SHSs), testing has increased in recent years (by 46.5% between 2015 and 2018), although falls have been observed in 2020, likely due to
COVID-19 restrictions. Of those tested in sentinel SHSs (2015 to 2020), around 1.1% test positive for HCV (1.0% in 2020). In 2020, rates of HCV diagnoses in all SHSs were higher amongst people living with diagnosed human immunodeficiency virus (HIV) infection (112.8 per 100,000 among gay, bisexual and other men who have sex with men (MSM), and 74.4 per 100,000 among all attendees) than in those who were HIV negative or of unknown HIV status (24.1 per 100,000 among MSM, and 12.2 among all attendees). Since 2016, rates of HCV diagnoses have fallen in all individuals attending SHSs, with the greatest falls seen in those who have diagnosed HIV infection. This may be a reflection of the use of HCV DAA drugs and other harm reduction initiatives in those diagnosed in sexual health or HIV services. In 2020, of the people living with diagnosed HIV and accessing HIV care in England, 0.9% tested positive for either an acute or chronic HCV infection and HCV co-infection varied by exposure group, with the proportion co-infected being highest in people with diagnosed HIV who reported exposure through injecting drug use alone (17.8% in 2020) and in combination with acquiring HIV through sex between men (3.5% in 2020).

Rates of HCV infection in all blood donors remain low at 23.8 per 100,000 donations in 2020, with 25 confirmed HCV positive cases that year. These low rates were also observed in recent HCV testing of convalescent plasma from donors who had recovered from COVID-19 (20.2 per 100,000 donations/samples). Risk factors for infection included non-disclosed injecting drug use, a range of reported possible blood contacts that were not necessarily causal, for example, tattoos and piercings. Higher rates of HCV were also seen in donors from countries where HCV is endemic.

**Substantial progress has been made to increase the numbers accessing HCV treatment, but more needs to be done to reach the WHO programme target**

Overall, data shows that between 2015 and 2020, around 3 in 4 (73.5%) patients with diagnosed chronic HCV were linked to specialist HCV treatment services. A slightly lower proportion (65.3%; the 2020 WHO target is 75% (6)) of all patients with diagnosed chronic infection started HCV treatment (88.8% of those who were linked to specialist HCV treatment services). Just less than half of all people diagnosed with chronic HCV infection (45.8%) were known to have achieved a sustained virological response (SVR); 78.6% of those who started treatment with an outcome recorded (the 2020 WHO target is 90% (6)).

Among those who started treatment with an outcome reported, nearly 80% achieved SVR with just over 15% being lost to follow-up. SVR rates among those who were not lost to follow-up were high at 95.1%. Overall, between tax years 2015 to 2016 and 2020 to 2021, NHS England data shows that up to 58,850 treatment initiations took place (58,848 suggested by
commissioning data, 55,845 in the NHS England Hepatitis C Patient Registry and Treatment Outcome System (NHS England Registry)).

Data from the UKHSA Antiviral Unit shows that amongst DAA-naïve individuals with subtype 1a infection, NS5A resistance prevalence was 11.1% in 2016, 34.2% in 2018 and 17.2% in 2021, suggesting an increase in transmitted resistance, although the drivers are currently unclear. Among DAA-experienced individuals over the same period, the prevalence of NS5A resistance in HCV subtype 1a remained high, ranging from 27.0% in 2017 to 58.3% in 2021, indicating the high likelihood of emergent NS5A resistance in this population.

Data from the NHS England Registry shows that increasing numbers of people with HCV are accessing treatment, including vulnerable groups, and NHS England elimination initiatives are a likely contributor to this. An increasing proportion of referrals are coming from outside traditional healthcare settings (around one in 5 from drug services and around one in 10 from prisons between tax years 2012 to 2013 and 2019 to 2020) and are being treated outside traditional secondary care settings (around one in 7 treated in drug services and around one in 10 in prisons between tax years 2012 to 2013 and 2019 to 2020). In drug services, an increasing proportion report being offered and accepting HCV treatment (around 3 in 4 in the 2020 UAM Survey) and around half of those testing HCV RNA positive in tax year 2020 to 2021 in prisons or other places of detention, are recorded as having received referrals for specialist HCV treatment. Among patients with cirrhosis at initiation of treatment between tax years 2012 to 2013 and 2019 to 2020, just under half were diagnosed late, receiving their first reported HCV diagnosis within the previous 2 years.

Given the numbers treated so far and current trends, statistical modelling (9) predicts that during 2020 around 9,000 people would be living with HCV-related compensated cirrhosis in England and this would reduce to around 2,100 by 2030, representing a fall of 44% by 2020 and 87% by 2030 compared with a 2015 baseline. Incidence of HCV-related HCC/ESLD is predicted to fall from 1084 in 2020 to 369 in 2030, representing a fall of 36% by 2020 and 78% by 2030 compared with a 2015 baseline.

Substantial progress has been made since 2015 to increase the numbers accessing HCV treatment, but more needs to be done to reach the 2030 WHO target of at least 80% of those diagnosed accessing treatment (3).

In conclusion

Latest WHO guidance proposes impact targets for validation of HCV elimination that are absolute, namely reducing incidence to less than or equal to 5 per 100, 000 persons (less than or equal to 2 per 100 PWID) and HCV-related annual mortality to a rate of less than or equal to 2 per 100,000 persons (2). These targets are proposed to replace, although they are equivalent to, the relative reduction targets originally defined in the WHO 2016 GHSS (3). The new absolute impact targets are proposed in combination with a set of programmatic targets to
improve HCV testing (equal to or greater than 90% of people with HCV diagnosed), treatment (equal to or greater than 80% of people diagnosed with HCV are treated) and prevention of infection (0% unsafe injections, 100% blood safety, and 300 needles or syringes per PWID/year) (2).

Overall, data suggests significant reductions in the prevalence of chronic HCV infection in England. HCV associated morbidity and mortality continue to fall with WHO 2020 mortality targets (relative to 2015) exceeded 3-fold, and latest data showing that newly proposed WHO absolute mortality targets are already met in England.

Whilst alternative ways of monitoring HCV incidence need to be considered, proxy measures based on HCV prevalence suggest some progress has been made, with latest estimates showing a decrease in HCV prevalence of 37% by 2020 from the 2015 baseline. Preliminary estimates of reinfection following treatment using surveillance data suggest conservative reinfection rates of 8.1%, therefore, current evidence shows that more needs to be done to prevent new and reinfections.

Infection control measures are already in place to prevent transmission of HCV in healthcare settings, and the blood supply is routinely screened for HCV (see Appendix 1). However, data shows that NSP provision is sub-optimal with just 2 in 3 reporting adequate provision for their needs. Awareness of infection needs improving, and while the numbers accessing HCV treatment have increased significantly since 2015, more needs to be done to reach the target of equal to or greater than 80% of people diagnosed with HCV accessing treatment (65.3%, 2015 to 2020).

If elimination is to be achieved and sustained, efforts and investment in prevention, testing and treatment will need to be redoubled to ensure that the ground lost during the COVID-19 pandemic is made up. It will be critical to expand our reach to underserved groups, and those who are no longer in contact with services that offer HCV testing, as well as implementing and evaluating approaches that facilitate testing and treatment of these groups who are at greatest risk of being lost along the care pathway. Investment in harm reduction remains sub-optimal with reductions in the prevalence of chronic HCV infection primarily the result of HCV treatment. Improvements in harm reduction to prevent new infections are urgently required, along with an increased awareness of the risk posed by reinfection following treatment.
Public health recommendations

These recommendations are for stakeholders, including:

- NHS and local authority commissioners
- providers of prevention, testing, diagnosis and treatment services in the community, as well as primary and secondary care
- patient and third sector organisations
- those working in academia in HCV-related areas of public health, microbiology and clinical medicine

Preventing infection through adequate harm reduction

Given that progress to date is largely the result of increased treatment rather than improved prevention of infections due to improved harm reduction, commissioners of services for people who inject drugs should expand access to the full range of provision (including OST, NSP including the provision of LDSS, and patient information) to reduce HCV transmission, including among people who inject new psychoactive substances or image and performance-enhancing drugs (IPED). National Institute for Health and Care Excellence (NICE) guidance is available on NSP (10) and OST (11).

UKHSA in collaboration with the Office for Health Improvement and Disparities (OHID) and commissioners should scope how access to, and uptake of, NSP in all settings can be mapped and monitored to contribute to the evidence of NSP impact.

UKHSA in collaboration with OHID and the National Institute for Health Research (NIHR) Health Protection Research Units (HPRU) should evaluate the impact of changes in NSP provision that took place during COVID-19 lockdowns and assess their impact on health inequalities.

The National Health and Justice Team in UKHSA, working with national and regional leads in NHS England Health and Justice, should continue to work collaboratively to improve HCV prevention programmes (as well as HCV testing and access to treatment) for people in secure and detained settings through commissioning and delivery of evidence-based services supported by appropriate advice, guidance and resources for prisons and associated healthcare teams. This includes the provision of disinfectant or decontamination equipment for sharps and access to drug treatment services.
Commissioners of services for people who use drugs and alcohol should encourage the provision of low dead-space injecting equipment through service specifications and commissioning standards.

The National Strategic Group for Viral Hepatitis (NSGVH) should work with stakeholders to consider how to improve harm reduction and prevention activity among those who are less likely to access drug services, for example those who are homeless.

Treatment and BBV prevention services, including drug and addiction services, should ensure that appropriate harm reduction support is provided to help guard against reinfection. UKHSA should support this by monitoring HCV reinfection rates and including this information in the HCV data dashboard.

**Increasing case-finding and the proportion diagnosed**

All stakeholders should work to improve awareness of HCV and national guidance on testing for HCV among health care professionals, for example by encouraging participation in, and audit of, Royal College for General Practitioners (RCGP) e-learning (for example, Hepatitis B and C e-learning course) (12).

All stakeholders should improve the offer and uptake of HCV testing to those at risk of HCV infection and reinfection following treatment by implementing NICE guidelines (13).

Commissioners and providers of BBV prevention services should ensure that testing guidance is fully implemented, among those attending drug, and other, services (including pharmacy, outreach and web-based NSP providers) (14). The use of alternative approaches to sampling and testing, including capillary or fingerprick blood sampling and point of care testing, that facilitate testing in non-clinical settings or alleviate delays initiating treatment, should be considered and evaluated.

Commissioners and providers of drug services should consider implementing BBV opt-out testing upon initial assessment for all attendees, and ensure at least annual repeat testing for those at continued risk, including for reinfection after successful antiviral treatment, in line with NICE guidance (13, 14).

UKHSA, national policy makers, and stakeholders should consider the evidence base for broader HCV testing strategies, to include opt-out, universal and targeted testing approaches, in broader healthcare settings such as emergency departments, antenatal care and primary care.
UKHSA and NHS England Health and Justice commissioners should ensure that BBV opt-out testing for new receptions to English prisons continues to be monitored to improve testing offer and uptake. Testing data outside the 14-day period from reception should also be available for monitoring and evaluation.

NHS England Health and Justice commissioners should maintain support for peer workers (for example, those provided by The Hepatitis C Trust) who facilitate BBV testing and HITT initiatives within the prison estate.

Commissioners and providers of laboratory services should ensure, wherever possible, that reflex testing (RNA amplification testing on the same sample as the original antibody assay) is implemented to decrease the turnaround time for referral, benefit patient care and increase cost effectiveness (15, 16).

All diagnostic laboratories should include recommendations for onward patient referral on the laboratory report, and implement direct reporting of new diagnoses to their operational delivery network (ODN), as well as to the individual requesting the test.

Increasing the numbers accessing and completing hepatitis C treatment

NHS England and other commissioners of HCV treatment and care services should continue to work with public health agencies, primary and secondary care clinicians, patient organisations and other stakeholders to simplify and strengthen referral pathways and continuity of care (especially on transition from prison to the community), to improve access and uptake of HCV treatments in primary and secondary care including mental health services, drug treatment services, prisons, homeless services, pharmacies and other settings.

UKHSA and the NIHR HPRUs should evaluate the impact of the Hepatitis C re-engagement exercise (17) and consider what lessons can be learnt to improve the use of surveillance data for case-finding and engagement in care.

Relevant stakeholders should consider scoping the feasibility and evidence for a national media campaign to encourage those with past risk factors but silent disease to come forward for testing.

UKHSA in collaboration with OHID and the NIHR HPRU should evaluate the impact of changes in HCV antiviral treatment provision that took place during COVID-19 lockdowns and assess their impact on health inequalities.
Strengthening a person-centred, holistic approach to hepatitis, recognising the role of syndemics (18)

UKHSA and NHS England, in collaboration with delivery partners, should support the evaluation of new models of testing and service delivery and assess their impact on health inequalities.

All stakeholders should embed hepatitis C prevention, testing, diagnosis and care within a broader person-centred health and social care rights-based approach.

All stakeholders should continue to support evidence-based innovative approaches to strengthen community and outreach service delivery.

Making improvements and monitoring metrics

UKHSA and the NSGVH should consider alternative approaches to monitor HCV incidence to support validation of elimination and evidence of harm reduction impact (19).

UKHSA should continue to update modelled estimates of HCV prevalence and burden and refine as new data becomes available.

UKHSA should further develop the HCV data dashboard to incorporate local prevalence and burden estimates and support partners in the development of data driven action plans to improve local care pathways.

All stakeholders should support national and local initiatives to improve data quality to inform monitoring metrics, including more consistent reporting of full identifiers for data linkage with other health data sets to help identify where people fall out of the care pathway.

Commissioners of services for people who use drugs and alcohol should specify, in contracts with providers, the legal requirement to report (as a notifiable disease) all HCV positive laboratory results with patient identifiers to UKHSA, including those from DBS and point of care testing.

Public health professionals working with local authorities and NHS commissioners should consider including HCV diagnosis and treatment in health and wellbeing needs assessments and strategies, particularly services targeting marginalised populations at increased risk of HCV infection, like PWID and those experiencing homelessness.

All stakeholders should endeavour to accelerate efforts to eliminate HCV in the context of the COVID-19 pandemic by working together to develop, refine and embed metrics and national
indicators needed to monitor this, including the contribution of reinfection following treatment and how this impacts progress to elimination.

NHS England should consider recording confirmation of HCV treatment completion as a proxy for successful HCV treatment when testing for SVR is not possible.

UKHSA should consider establishing a national HCV sequence database to help monitor the potential threat of antiviral resistance in England.
Introduction

HCV is a bloodborne virus that infects and damages the liver. Persistent infection over time can lead to cirrhosis, liver failure or cancer. Globally, HCV causes around 290,000 deaths and 1.5 million new infections each year (20). In 2019, an estimated 58 million people were thought to be living with chronic HCV infection, with a prevalence of around 0.75% in the general population (20).

Groups (not mutually exclusive) at increased risk of hepatitis C infection are those who have:

- injected drugs (currently or in the past)
- been in prison or other secure and detained settings
- experienced homelessness
- links to countries where HCV is endemic
- received blood prior to 1 September 1991 or NHS blood products prior to 1986
- had occupational exposure to hepatitis C, for example via needlestick injury
- been born to HCV positive mothers
- engaged in high-risk sexual behaviours (21)

In recent years, the development of DAA drugs revolutionised the HCV treatment landscape by providing a short, well-tolerated and effective orally administered cure with fewer side effects than previous treatment regimens (22). As DAA drugs are rolled out and HCV-related morbidity and mortality decline, the possibility of treatment as prevention (5, 23) becomes a reality, provided new, and reinfections following treatment, can be prevented.

In May 2016, the UK signed up to the WHO GHSS on Viral Hepatitis (3) committing to meet targets of an 80% reduction in incidence of HCV infection and a 65% reduction in mortality from HCV by 2030 from a 2015 baseline (see Appendix 1). More recently, absolute impact targets have been proposed to validate elimination at national level, with annual rates of less than or equal to 5 per 100,000 persons (less than or equal to 2 per 100 for PWID) for HCV incidence, and less than or equal to 2 per 100,000 persons for HCV-related mortality, suggested (2).

The collective vision for HCV in England developed by the NSGVH is that:

“All people at risk of HCV infection should have access to testing. If positive, they should be advised on prevention of onward transmission and placed on a treatment pathway. If negative, action should be taken to reduce subsequent risk of infection.”

To track our progress against these targets, it is important to monitor the impact of interventions in the following 2 important impact areas:
• reducing transmission, and hence the number of primary infections and reinfections (incidence)
• reducing morbidity and mortality due to HCV and its complications

To support this, it is also important to monitor process measures including the geographical coverage of programmes and services that are critical to reducing the levels of HCV infection and HCV-related morbidity and mortality in England. Given that infection control measures are already in place to prevent transmission in healthcare settings, and the blood supply is routinely screened for HCV (see Appendix 1), these are:

• adequacy of harm reduction
• proportion of people with chronic HCV diagnosed and aware of their infection
• treatment coverage of people diagnosed with chronic HCV

The NHS England HCV Elimination Programme is working to eliminate HCV in advance of the WHO goal of 2030, and to enable this, a number of elimination initiatives have been established. These initiatives include extensive programmes of work, in partnership with stakeholders, in areas such as community outreach, drug treatment services, needle and syringe provision, health and justice, testing in primary care and high risk immigrant communities and through the early detection of liver cancer.

This report comes at a critical moment when the COVID-19 pandemic has placed an enormous strain on health systems in the UK, and worldwide, exposing system weaknesses and structural inequalities faced by underserved communities. As such, the COVID-19 pandemic poses a serious threat to the UK’s ability to (i) meet, and (ii) demonstrate that we have met, WHO HCV elimination goals. This includes, in particular, the impact on service delivery and access for key populations, plus the quality and timeliness of surveillance data that allows us to monitor changes in service capacity and effectiveness, and our ability to monitor progress to elimination. Previous analyses from Public Health England (PHE) have already highlighted a reduction in testing for viral hepatitis in drug services, prisons, general practice and SHSs, and also in the number of individuals initiating HCV treatment, which were 30% lower between January and August 2020, than in the same period in 2019 (24). Whist an improvement in testing, diagnoses and treatment initiation has been observed following the easing of national lockdown restrictions, this only reflected a partial recovery in service provision and demand, as numbers of tests, diagnoses, and treatment initiations in the summer of 2020 remained considerably lower than in the corresponding months in 2019 (24).

Whilst there has been a loss of capacity across all UK Public Health agencies as staff have been diverted to the COVID-19 response, (25) COVID-19 has also accelerated the development of innovations in service delivery, including telemedicine, expanded community outreach testing and linkage into care. While many of these innovations have enabled access to services during the COVID-19 response, there is a critical need to evaluate the impact of these changes on health inequalities, since HCV predominantly affects socially disadvantaged
and/or marginalised groups including PWID, those who experience homelessness, and populations who have close links to countries where HCV is endemic, who already experience poor health outcomes.

This report summarises the scale of HCV infection and related disease in England up to the end of 2020 and presents data (see Appendix 2) that allows monitoring of progress against WHO targets for validation of elimination of viral hepatitis as a public health problem, to identify where focused action is needed to honour the commitment to eliminate HCV as a major public health problem by 2030 at the latest.
Prevalence of HCV infection in England

Data on the prevalence of HCV infection among PWID is available from the UAM Survey and is generated for the general population using statistical modelling (9). Modelled estimates are based on HCV prevalence data from the UAM Survey, estimates of the number of people who inject drugs (26), HES data on severe HCV-related liver disease, estimates of disease progression probabilities from the Trent cohort (9, 27) or other studies (9), and data on HCV treatment derived from IMS sales, SSBBV testing, NHS England and the NHS England Registry (9, 28). Estimates are thus consistent with key surveillance sources and available knowledge of the natural history of hepatitis C, although there are inherent uncertainties in estimating prevalence of undiagnosed infection, which by definition are not observed in surveillance data.

Overall, available data suggests significant reductions in the prevalence of chronic HCV infection in England with promising signs that chronic infection is declining in those who have ever injected drugs.

Latest modelled estimates suggest that in 2020, around 81,000 people (95%Crl: 66,000 to 94,000) in England were living with chronic HCV infection (1). This represents a decrease of 37% since 2015, the year that WHO elimination targets were agreed, when an estimated 129,000 people (95%CrI 114,000 to 143,000) in England were living with chronic HCV infection (Figure 1) (9, 29) and a decrease of 9% on the previous year (89,000 in 2019) (1). The recent reduction is largely due to the advent of new DAA treatments which became available via early access programmes in 2014 to 2015 and became more widely accessible from 2016 to 2017 (see Figure 28).

Of the 81,000 people living with chronic HCV infection, modelling suggests that 21,600 infections are in current or recent PWID, 50,200 in those with a past drug injecting history but who are no longer injecting, and 8,700 are in those with no history of injecting. Again, there are uncertainties around modelling, but there is a suggestion that the majority of remaining prevalence is in those with a past history of injecting drug use. These individuals may no longer be observed in drug treatment services, prisons, or other settings, and information on this group is based primarily on those developing HCV-related HCC/ESLD and are observed in hospital. Of note is that only around 50% of individuals developing severe HCV-related liver disease in the last 10 years could be linked to a previous HCV diagnosis, and in the tax year 2019 to 2020 around one quarter (24.6%) had been treated with direct-acting antivirals prior to hospital admission, suggesting that there may be an unmet need in this population.

To help inform levels of undiagnosed HCV infection in those who never have, or who no longer, inject drugs, an NHS England study is underway to investigate levels of HCV infection in primary care populations. There is also a cross-organisational programme of work to determine how many pregnant women are tested for HCV in antenatal services and to assess
current HCV testing policies and practice. This programme will include a cost-effectiveness study, a research project into seroprevalence, and the creation of an antenatal care pathway. When combined with other data and information, this will enable the programme and partners to re-assess whether opt-out testing is possible across all antenatal services in England.
Figure 1. Estimates of chronic prevalence of HCV in England, 2010 to 2020 (bars represent 95% CrI) (9)

Data source: Modelled estimates of chronic HCV prevalence (see Appendix 3 section 1), based on HCV prevalence data from the Unlinked Anonymous Monitoring Survey of People Who Inject Drugs (4); estimates of the number of people who inject drugs (26); Hospital Episode Statistics(HES), NHS Digital for England. Produced by UKHSA (data on severe HCV-related liver disease); Trent cohort data (estimates of disease progression probabilities) and data on HCV treatment (IMS sales data, Sentinel Surveillance of Bloodborne Virus Testing and the NHS England Hepatitis C Patient Registry and Treatment Outcome System).
While risk factors for HCV infection are missing from the majority of laboratory reports (65.2% missing in 2019 and 59.2% in 2020), those reported support the view that injecting drug use continues to be the most important documented risk factor for HCV infection in England, being cited directly as the risk in around 75% (75.8% in 2019 and 76.8% in 2020 (1)) of all laboratory reports where risk factors were disclosed, with prison cited as the risk in a further 23.3% in 2019 and 22.5% in 2020 (1, 29), principally as a result of the relatively higher levels of injecting drug use that are observed among this population (30).

Information on the prevalence of HCV infection among PWID can be obtained from the cross-sectional bio-behavioural survey of PWID, the UAM Survey (4).

In 2020, the proportion of people who had ever injected psychoactive drugs participating in the UAM Survey (4) who had evidence of ever being infected with HCV (testing anti-HCV positive) was 58.4% (54.9% in 2019), an increase from 51.6% in 2015 (p=0.001); dark teal and light teal bars together (Figure 2) (1). In 2020, the prevalence of chronic HCV infection was 17.3% (23.8% in 2019), a fall from 28.7% in 2015 (P<0.001; Figure 2) (1). In 2020, the prevalence of cleared infection (anti-HCV positive, RNA-negative) was 41.0% (31.1% in 2019), a increase from 23.0% in 2015 (P<0.001; Figure 2), while the proportion never having HCV (testing anti-HCV negative; Figure 2) fell from 48.4% to 41.6% over the same period (P=0.001)(1).

While the extent of changes to chronic (and cleared) HCV prevalence in 2020 should be interpreted with caution as 2020 UAM Survey data is provisional (31), data from SSBBV testing supports the decline in chronic prevalence since the proportion of individuals where their last reported RNA or antigen test within that year was positive, decreased from 29.4% in 2015 to 14.1% in 2020 (Figure 3) (1). The decreasing proportion of HCV RNA/antigen positive infection when coupled with the increasing proportion of cleared HCV infection provides further evidence of a fall in HCV chronic prevalence and that DAA drugs are having an impact.

Taken together, the increases in those ever HCV infected combined with recent decreases in chronic infection, suggest that increased access to treatment, rather than improvements in harm reduction, may be having an impact on levels of chronic infection in this important group who are at risk of acquiring and transmitting the virus. The indirect effect of treatment as prevention (TasP), which would result in fewer HCV antibody positive results, is unlikely to be apparent until greater reductions in chronic prevalence have been achieved. Since it is likely that the ageing population observed in the UAM study will have an increasing cumulative risk of infection over time, any TasP effect would need to have first accounted for duration of exposure in this group. Work is currently ongoing to establish this.
Figure 2. Trend in HCV prevalence* among people injecting psychoactive drugs in England: 2011 to 2020

Data source: Unlinked Anonymous Monitoring Survey of people who inject drugs in contact with specialist services (4).

* Estimates for chronic and cleared HCV infection have been adjusted to take into account anti-HCV positive samples with missing RNA status. The ratio of chronic or cleared infection was applied to the anti-HCV positive samples with missing RNA status by year and region. Note: chronic prevalence in 2019 and 2020 without adjustment for insufficients was near identical at 23.8% and 18.7% respectively.

¶ Due to limitations in recruitment as a result of the COVID-19 pandemic, 2020 data is provisional.
**Figure 3. Proportional distribution of results of the last reported HCV RNA or antigen test within a year, in 19 sentinel laboratories: 2015 to 2020**

Data source: Sentinel Surveillance of Bloodborne Virus testing (32).

*All data is provisional. Reporting and processing time mean that not all RNA tests conducted within 2020 have been processed, so the distribution is likely to change. An individual can only be counted once in a year, however, can be reported within multiple years. Excludes children aged under one year. Patient identifiable data submitted by laboratories is variable, particularly from sexual health and drug and alcohol services, which limits the ability to de-duplicate. Data is de-duplicated subject to availability of date of birth, Soundex, NHS number and first initial. The proportion positive is calculated using number of individuals with an RNA or antigen test. Numbers include venous and DBS testing, with retrospective DBS data added from 2014. Manchester Royal infirmary and Abbott (formerly Alere Toxicology PLC) conduct the majority of DBS testing, both report to SSBBV testing.

‘Below detection’ means that the quantitative result indicates that the result is below the lower level of quantification; it is not possible to determine whether this indicates an individual has tested negative.
Monitoring the WHO impact target for HCV incidence

To eliminate HCV as a public health problem, a reduction in the number who become newly or ReinfeCted, must be achieved. The WHO has set impact targets for reducing the number of incident HCV infections (see Appendix 1) (3, 6).

Recently the WHO have proposed new methods for monitoring HCV incidence (see Appendix 3 section 2, and Appendix 1) in their interim guidance for country validation of hepatitis elimination (2).

Data on trends in the number of (incident) primary and reinfections is available from the UAM Survey, Second Generation Surveillance System (SGSS), SSBBV testing linked to the NHS England Registry and via modelling (see Appendix 3 section 3 and Appendix 2).

<table>
<thead>
<tr>
<th>Impact target area</th>
<th>WHO GHSS 2020 target relative to 2015 baseline (3)</th>
<th>WHO GHSS 2030 target relative to 2015 baseline (3)</th>
<th>WHO interim guidance elimination validation target: annual absolute HCV incidence rates (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incidence: New cases of chronic viral hepatitis C infection</td>
<td>30% reduction</td>
<td>80% reduction</td>
<td>Less than or equal to 5 per 100,000 persons (less than or equal to 2 per 100 for PWID)</td>
</tr>
<tr>
<td>Proxy measure: alternative WHO approach, but not adequate for validation of elimination</td>
<td></td>
<td></td>
<td>Reduction in HCV viraemia prevalence by 80% from 2015 baseline (in general population and PWID)</td>
</tr>
</tbody>
</table>

**Progress in England**

| Proxy measure: reduction in HCV viraemia prevalence from 2015 baseline (in general population) | 37.2% by 2020* (31.0% by 2019) |
| Proxy measure: reduction in HCV viraemia prevalence from 2015 baseline (in PWID) | 39.7% by 2020** (17.1% by 2019) |

*2020 figures include provisional data from the UAM study, that may have been affected by COVID-19
**2020 figures are provisional due to the impact of COVID-19 on national bio-behavioural surveys of BBV in PWID in 2020 (UAM Survey)
Reduction in chronic HCV prevalence as a proxy measure for reduction in incidence

Monitoring incidence of infection remains a challenge as incident HCV infection is difficult to measure directly (19). Ideally, we would monitor the actual or estimated number of new HCV infections that arise annually in PWID, as well as any that result from net migration and other sources, and monitor this over time. However, the former is difficult to estimate because a significant proportion of acute infections are asymptomatic, and hence undiagnosed, and there is considerable uncertainty around the number of PWID in England (33, 34, 26, 35). In addition to this, it is difficult to select a sentinel population of PWID for monitoring that is representative of PWID as a whole as not all PWID are engaged with services or healthcare.

Recognising this challenge, WHO have proposed a proxy measure: the reduction of HCV viraemia prevalence. With latest modelled estimates suggesting that around 81,000 people in England were living with chronic HCV infection in 2020, a decrease of around 37% has been achieved from the 2015 WHO baseline year when 129,000 infections were estimated (Figure 1) (1).

Among PWID participating in the UAM Survey, a relative percentage fall of 39.7% in the prevalence of chronic HCV infection was observed from 28.7% in the 2015 WHO baseline year to 17.3% in 2020 (Figure 2) (1).

In the coming year, NHS England are setting up a prospective study to help inform the incidence of HCV infection in England; preliminary findings are anticipated early in 2023.

Other estimates and proxy measures of HCV incidence in PWID from the UAM Survey

Other data from the UAM Survey currently provides little convincing evidence of a fall in HCV incidence over the last 5 years.

Recent transmission of HCV has been explored among participants in the UAM Survey (4) who reported injecting psychoactive drugs in the previous year (see Appendix 3 section 4). When reviewing these estimates, there is no indication of any fall in incidence between 2011 to 2013 and either 2016 to 2019 (p=0.9) or 2016 to 2020 (Figure 33; p=0.6). However, given the difference in sampling due to COVID-19, incidence estimates for 2020 should be interpreted with caution (31). This supports the hypothesis that the fall in chronic prevalence among PWID (Figure 2) is more likely the result of increased HCV treatment rather than improved prevention of infections due to improved harm reduction. Studies suggest that both are needed for elimination (5).
Since PWID are unlikely to have acquired their HCV infections prior to engaging in this risk behaviour, monitoring HCV antibody prevalence in recent initiates to injecting drug use serves as another proxy indicator of HCV incidence. In the UAM Survey, recent initiates to injecting are defined as individuals who began injecting up to 3 years prior to their participation in the survey (see Appendix 3 section 5). Data from the UAM Survey of PWID (4) provides no evidence of any fall in anti-HCV prevalence among recent initiates to injecting drug use between 2011 (20.0%, CI 15.1 to 25.6) and 2019 (29.1%, CI 23.3 to 35.3; P=0.102). Data is not available for 2020 as numbers of recent initiates participating in the UAM 2020 Survey were too low (31).

HCV infection in young adults as a proxy measure of HCV incidence

As most new infections are acquired via injecting drug use at a relatively young age, the prevalence of infection in young adults can be used as a proxy measure of incidence (see Appendix 3 section 6 and Figure 35). Reports of positive HCV tests (HCV RNA and/or anti-HCV) captured through UKHSA’s SGSS (36) show a steady decline in the proportion of positive tests from those aged 15 to 19 years (7.2% per year) and aged 20 to 24 years (8.9% per year) between 2014 and 2020, although overall numbers of positive tests in those aged 15 to 19 and 20 to 24 years have remained comparatively stable prior to the COVID-19 epidemic, during which time overall numbers fell (24). However, interpretation is difficult as prior to the COVID-19 pandemic, overall numbers tested have increased substantially over time, with potential expansions into different settings and risk groups.

Reinfection among those achieving SVR following treatment

Individuals who have cleared HCV infection after treatment remain at risk of reinfection (37, 38, 39, 40). In England, the extent to which reinfection occurs after HCV treatment, after how long, and the risk factors associated with reinfection are currently unclear. It is possible to obtain a preliminary indication of levels of reinfection following treatment using data on HCV treatment from the NHS England Registry linked to serial HCV RNA testing data from SSBBV testing (see Appendix 3 section 7).

Among individuals with an SVR reported and/or a follow up negative RNA test at least 6 months after treatment initiation (as a proxy for SVR when it was not recorded), linked national testing and treatment surveillance data suggests reinfection rates of 8.1% (1,336 out of 16,505) in England among those who had received treatment for HCV between 2015 and 2021.
Seventy-one percent (948 out of 1,336) of those with a reinfection had a history of injecting drug use compared to 51.0% (7,742 out of 15,169) in those with no known reinfection. The reinfection rate was 10.9% (948 out of 8,690) among individuals with a history of injecting, compared to 5.0% (388 out of 7,815) among those with no injecting history recorded.

As treatment is extended to populations and settings where people are more likely to be actively injecting, estimates of reinfection might be expected to rise. Further work is being undertaken to refine the reinfection algorithm (see Appendix 3 section 8).

In the coming year, NHS England are setting up a study to estimate reinfection rates among current injectors who are successfully treated for their HCV infections. Preliminary findings are anticipated early in 2023.
Monitoring the WHO impact target for HCV-related mortality

In England, mortality from HCV-related liver disease increased up until 2014, as people who acquired their infections decades earlier progressed to advanced liver disease and access to sub-optimal interferon-based treatments had been inadequate (41). Since new DAA drugs (42 to 50) have been available and delivered through the ODNs that were established in 2013, a fall in the number of HCV-related liver transplants and deaths has been observed (41).

Data to monitor trends in HCV-related morbidity and mortality is available from the ONS for mortality data, HES for data on severe HCV-related liver disease, and NHS BT for registrations and liver transplants undertaken, where post-HCV cirrhosis is the indication for transplant (see Appendix 2).

Annual HCV-related mortality rate and death registrations for HCV and HCV-related HCC/ESLD (WHO impact target)

The WHO have proposed targets for reductions in HCV-related mortality (see Appendix 1) (2, 3).

<table>
<thead>
<tr>
<th>Impact target area</th>
<th>WHO GHSS 2020 target relative to 2015 baseline (3)</th>
<th>WHO GHSS 2030 targets relative to 2015 baseline (3)</th>
<th>WHO interim guidance elimination validation target: annual absolute HCV-related mortality rate (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mortality: Viral hepatitis C deaths</td>
<td>10% reduction</td>
<td>65% reduction</td>
<td>Equal to or less than 2 per 100,000 persons</td>
</tr>
</tbody>
</table>

Progress in England

| Mortality: Viral hepatitis C deaths | 34.9% reduction | 0.56 per 100,000 population (2020)* |

* Even if reporting of HCV on death certification has not improved beyond levels historically reported (51, 52) these preliminary figures show the 2030 WHO interim elimination metric has already been met.

In 2020, data shows that the annual HCV-HCC/ESLD mortality rate was 0.47 per 100,000 population, a fall from 0.69 per 100,000 in the 2015 WHO baseline year (1). HCV-related HCC/ESLD deaths, rather than just deaths associated with HCV infection, are monitored since HCC/ESLD presents clinically so the full spectrum of deaths from this indication should be captured.
When deaths where HCV is coded as the underlying cause of death without any mention of HCC/ESLD are also included, overall numbers are higher and trends similar, with a slightly greater fall in the death rate from 0.88 in 2015 to 0.56 per 100,000 in 2020 (Figure 4) (1).

These preliminary figures show that the WHO interim validation of elimination metric, to achieve an HCV-related annual mortality rate of less than or equal to 2 per 100 000 persons, has already been met in England, even if reporting of HCV on death certification has not improved beyond levels that have been historically reported (51, 52). Whilst codes used in England to define HCV-related mortality differ slightly from those used by WHO (see Appendix 3 section 9), figures generated using WHO codes produce a similar, albeit marginally higher rate of 0.64, which still confirms that the WHO interim elimination metric, to achieve an HCV-related annual mortality rate of less than or equal to 2 per 100 000 persons by 2030, has been met in England.

When relative numbers are considered, there were 263 death registrations for HCV-related HCC/ESLD in 2020, a decline of 30.8% from 380 in the 2015 WHO baseline year (1). When deaths where HCV is coded as the underlying cause of death without any mention of HCC/ESLD are also included, overall numbers are higher and trends similar, with a slightly greater fall in deaths (34.9%) from 482 in 2015 to 314 in 2020 (Figure 4) (1). By all existing relative measures, the 2016 GHSS WHO target of a 10% reduction in HCV mortality by 2020 has been exceeded three-fold in England. Substantial progress has also been made towards the 2030 target of a 65% reduction in HCV-related deaths, where hitting the target would be represented by a fall in HCV deaths to 169 (the current trajectory predicts 133 deaths in 2030), (or a fall in deaths to 192 if WHO codes are used, with the current trajectory predicting 157 deaths in 2030).
Figure 4. Death registrations and annual HCV-related mortality rates in England¶, 2005 to 2020

Data source: Office for National Statistics (53).
† Defined by codes or text entries for ascites, bleeding oesophageal varices, hepato-renal syndrome, hepatic encephalopathy or hepatic failure.
¶ Excluding deaths registered in England when the deceased’s usual residence is outside England.

* 10% reduction on 2015 level; **65% reduction on 2015 level; ***Less than or equal to 2 per 100,000 persons.
Incidence of HCV-related HCC/ESLD

HCV-related morbidity can be monitored by following the number of new cases of HCV-related HCC/ESLD in England using HES (see Appendix 3 section 10).

In 2020, HES data suggests that there were 415 and 1,297 first presentations of HCV-related HCC and HCV-related ESLD respectively (1,505 people with either or both HCC/ESLD) (1). This is an encouraging reduction on the 2015 WHO baseline year (21.8% below for HCV-related HCC, 16.6% below for HCV-related ESLD and 17.3% below for HCV-related HCC/ESLD combined - see Figure 5) (1), suggesting that HCV DAA treatment is averting new cases of HCV-related HCC/ESLD as predicted by statistical models (23). While the risk of developing HCC is not completely eliminated following successful HCV treatment, particularly among those with advanced disease (54), HES data suggests incidence of HCV-related HCC fell between 2019 and 2020.
Figure 5. Preliminary estimates of incidence* of HCV-related ESLD**/HCC in England: 2010 to 2020

Data source Hospital Episode Statistics (HES), NHS Digital for England. Produced by UKHSA.

* An episode of HCV-related HCC/ESLD is defined as the FIRST if there have been no previous episodes of HCV-related ESLD or HCV-related HCC for that individual in the previous 5 years (0.4% are estimated to have had a previous episode more than 5 years earlier).

**Defined by codes or text entries for ascites, bleeding oesophageal varices, hepato-renal syndrome, hepatic encephalopathy or hepatic failure.

† Estimates of incidence of HCV-related ESLD**/HCC are not available for 2017 and 2018 due to loss of identifiers in 2017 HES data (see Appendix 3 section 10)
Registrations and liver transplants undertaken, where post-HCV cirrhosis is given as the indication for transplant

HCV-related morbidity can also be monitored by reviewing the number of English residents with post-HCV cirrhosis (recorded as either the primary, secondary or tertiary indication for transplant) registering at NHSBT for a liver transplant, as well as the number and proportion of transplants undertaken in those with HCV infection.

In 2020, there were 49 first liver transplant registrations with post-HCV cirrhosis, a 40.2% fall from 82 in the 2015 baseline year (P= 0.025; Figure 6) (1, 3). Likewise, first liver transplants undertaken for these indications declined by 52.9% to 40 in 2020 from 85 in the 2015 baseline year (P= 0.014; Figure 6) (1).

The proportion of all first liver transplants performed in England that were carried out in patients with HCV-related disease in 2020 (40 out of 656; 6.1%) is now just one third of the number 12 years earlier (93 out of 522; 17.8% in 2009) and half of that in the 2015 baseline year (85 out of 704; 12.1%) (1).

From March 2022, there will be an outreach partnership pilot with hepatitis C ODNs in 12 areas with the NHS England Cancer Directorate to deliver fibroscans and ultrasound scans, alongside HCV testing, to high risk populations using community vans. Those who have advanced HCV cirrhosis (or other liver disease) will be referred into a liver surveillance pathway and provided with peer support to help them stay on that pathway.
Figure 6. Number of first patient registrations in England where post-HCV cirrhosis was given as either the primary, secondary or tertiary indication for transplant and the number of first liver transplants undertaken in patients who were HCV positive (RNA or antibody) at registration and transplant: 2009 to 2020*

Data source: NHS Blood and Transplant UK Transplant Registry.

* These figures are based on registry data as at 15 June 2021 and include both elective and urgent registrations.
** HCV liver registrations are defined as first transplant registrations in England where post- HCV cirrhosis was given as either the primary, secondary or tertiary indication for the liver transplant.
*** First liver transplants undertaken for patients with post- HCV cirrhosis as either primary, secondary or tertiary indication for transplant at registration or transplant and/or patients who were HCV positive at registration or transplant.
Proportion of people with chronic HCV diagnosed and aware of their infection

Early diagnosis of HCV infection is important to achieve the best treatment outcome and prevention of progression to more advanced liver disease, yet only 21% of people globally are estimated to have been diagnosed (20). Globally, 15.2 million people living with HCV knew their status at the end of 2019 (20).

Proportion of people with chronic HCV, diagnosed (WHO programme target) and aware of their infection

The GHSS on viral hepatitis calls for a major global increase in the diagnosis of chronic HCV infection, with 30% of people diagnosed and aware on their infection by 2020 (3) (50% by 2020 in the WHO European region (6)) and 90% by 2030 (see Appendix 1) (2, 3).

Data on the proportion of people with chronic infection who are diagnosed and aware of their infection is available from the UAM Survey and the NDTMS (see Appendix 3 section 11 and Appendix 2).

<table>
<thead>
<tr>
<th>Service coverage or programme target area</th>
<th>WHO EURO 2020 target (6)</th>
<th>WHO GHSS 2030 target (3)</th>
<th>WHO interim guidance elimination validation target (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion of people with chronic HCV diagnosed</td>
<td>50% [75% of estimated number of patients at late stage of viral hepatitis-related liver disease (cirrhosis or HCC) diagnosed]</td>
<td>Greater than or equal to 90%</td>
<td>Greater than or equal to 90%</td>
</tr>
</tbody>
</table>

Progress in England

Proxy measure: proportion of PWID testing positive for HCV RNA in the UAM Survey who are aware of their chronic HCV infection

| Proxy measure: proportion of PWID testing positive for HCV RNA in the UAM Survey who are aware of their chronic HCV infection | | 40.4% in 2020* (33.9% in 2019) |

* 2020 figures are provisional due to the impact of COVID-19 on national bio-behavioural surveys of BBV in PWID in 2020 (UAM Survey).
In 2020, 40.4% of PWID sampled were aware of their current chronic infection (33.9% in 2019), a reduction from that seen in 2017 when this data was first available (58.2%, $P=0.012$; Figure 7) (1) and around one half of PWID sampled were aware that they’d ever been infected with HCV (54.3% in 2020, and 52.8% in 2019; Figure 7) (1). The lower levels of awareness in 2019 and 2020 may be a result of increased UAM Survey recruitment through outreach services, compared to traditional recruitment through services offered at the drug service building. Participants recruited through outreach may have been less likely to be engaged with drug services, and thus less likely to be aware of their current HCV infection.

Furthermore, as the majority were recruited through outreach BBV testing, they may have been tested for HCV alongside the UAM but had not received their test results at the time of questionnaire completion, leading to underestimation of levels of awareness. This is supported by NDTMS data which suggests that levels of awareness of infection may be higher among people who have ever injected drugs newly presenting to drug or alcohol treatment in England in tax year 2019 to 2020 who had received an HCV test, 58.2% reported knowing their HCV antibody status, of whom 31.1% reported they were antibody positive, and 45.9% reported knowing their HCV RNA status, of whom 23.5% reported they were chronically infected with HCV (RNA positive). Improvements to the UAM Survey design are in progress to address any potential bias that might result in an overestimate of the proportion unaware of their infection.

More needs to be done if the 90% WHO target is to be reached by 2030, and sustained and enhanced efforts are required to find those who remain undiagnosed. To further reduce levels of undiagnosed infection, it is necessary to continue to raise awareness of HCV and testing guidelines, and roll out (and monitor) testing (13) to more individuals at risk of infection, including priority populations like PWID (including those who do not regularly access drug services), rough sleepers and people experiencing homelessness, those in secure and detained settings, and to populations with close links to countries with a high prevalence of HCV infection, as well as increased investment in re-testing those at continued risk.

As time goes by, those who are not, or are no longer, in contact with services because they acquired their infections many years earlier (for example, through historic injecting drug use or via blood transfusion before the introduction of routine screening of the blood supply), will represent an increasing proportion of those who remain undiagnosed or have late diagnoses with advanced liver disease. As an increasing number of those with HCV infection are treated, it will also be important to raise awareness of the need for continued re-testing of the treated population who remain at risk of reinfection.
Figure 7. Estimated proportion of people injecting psychoactive drugs testing positive for HCV who are aware of their infection, England, 2010 to 2020 (bars represent 95% CI)

¶ Due to limitations in recruitment as a result of the COVID-19 pandemic, 2020 data is provisional.
* Due to a change in the questionnaire for 2017, completion of the self-reported status question was lower, resulting in a higher proportion of missing data than seen in previous years for 2017 and 2018.
** Data regarding awareness of HCV RNA result, and therefore chronic infection status, is available for 2017 onwards due to changes in the UAM Survey questionnaire.

A new UAM indicator was introduced in 2017 meaning data for awareness of ever HCV infection for 2017 onwards cannot be directly compared with that from earlier years.
Initiatives to raise awareness and increase numbers diagnosed

Because HCV is usually asymptomatic in the early years of infection, many individuals are unaware of their positive status. There are also other individuals who may have been tested in the past but have not accessed treatment or who have been tested for anti-HCV but not further tested for HCV RNA. Raising both professional and public awareness therefore remains a priority and an important component of reducing the burden of undiagnosed and untreated HCV infection.

In partnership with stakeholders, a variety of initiatives and resources have, or are being, developed to help raise awareness of HCV and increase the numbers diagnosed, including through improved case finding and testing in both the general population and among risk groups. Some of these initiatives, with links, are listed below:

1. UKHSA continues working alongside NHS England to provide accurate epidemiological data at ODN level via their [ODN HCV Testing and Treatment Dashboard](#). This quarterly dashboard pulls in testing and treatment surveillance data and data from elimination initiatives. It is designed to support ODNs in improved targeting of case-finding initiatives, resource allocation and monitoring of the local cascade of care and progression towards elimination goals. The dashboard now incorporates an HCV Service Care Pathway to help operationalise data from multiple steps of the care pathway into a logical process to inform local service improvements.

2. PHE published an [evidence review highlighting interventions that are effective in increasing case-finding and linkage to care](#) for patients with HCV (55). This was produced to support commissioners and health care providers in making decisions on prioritisation of resources and the commissioning of services.

3. HCV Action have produced a [Hepatitis C Commissioning Toolkit](#) which outlines the importance of effective commissioning in eliminating hepatitis C by setting out commissioning responsibilities (56).

4. A PHE [drugs commissioning support pack for adults](#) is available which outlines principles that local areas might consider when developing plans for integrated alcohol and drugs prevention, treatment and recovery systems. The principles are backed up by tailored annual data packs provided to local areas.

5. PHE produced COVID-19 guidance for commissioners and providers of services for people who use drugs or alcohol (58) as the availability and accessibility of services, including NSP, reduced in England during the COVID-19 pandemic (58).
6. PHE have produced an evaluation of HCV test and treat interventions targeted at homeless populations in England during the COVID-19 pandemic. Findings are summarised with recommendations for future testing and treatment of homeless populations in temporary accommodation (59).

7. PHE have produced a resource guide to support providers, commissioners and other organisations to undertake useful evaluations of hepatitis C elimination initiatives.

8. A suite of resources is available to help encourage people at risk of infection to seek an HCV test. These include an online testing quiz (see Appendix 3 section 12), posters, videos and banners for social media in multiple languages, co-branded by the World Hepatitis Alliance, the British Liver Trust and The Hepatitis C Trust.

9. A Hepatitis C re-engagement exercise (17) was launched in 2018 to support the NHS to identify people, registered with a GP, diagnosed with HCV in the past but who may not have cleared their infections, in order to offer testing and treatment to those with chronic infection. Data from the NHS England Registry shows that at least 326 individuals had already been identified and accessed treatment via this exercise by 23 June 2021.

10. The Hepatitis C Trust has a range of services to support case finding in the general population as well as in important risk groups. This includes their extensive peer programmes working across communities including drug services and prisons (see Appendix 3 section 13), provision of HCV training and outreach point of care testing services which include harm reduction information and services such as peer-led needle and syringe provision to key risk groups including people experiencing homelessness, and South Asian communities. Since its launch in July 2004, their confidential helpline: (+44 (0) 20 7089 6221) had received over 53,000 calls from patients, professionals and the general public by March 2021.

11. Local authorities continue to play a central role in testing for viral hepatitis in people accessing community drug treatment services with HCV testing recommended for those with a history, risks (including current or past injecting), symptoms, or findings from physical examinations that signify testing is indicated.

12. NHS procurement agreements (60) facilitate additional testing in poorly served communities, including among people who are homeless and those who do not currently access addiction services. This increased testing and treatment activity is supported by peer workers and helps vulnerable people to access testing and care. This includes pilots of HCV testing in community pharmacies for people using needle and syringe programmes who are not otherwise in contact with services (61, 62) as well as outreach testing vans for those that sit outside or do not access traditional health care settings.
13. The NHS elimination programme is supporting testing initiatives in primary care including (i) using a software tool installed in participating general practice electronic patient management systems to identify via an algorithm and offer testing to those with risk factors for infection (63) (see Appendix 3 section 14) and (ii) a University of Bristol and UKHSA study to pilot and establish acceptability of wide-scale HCV screening of the general public (aged 40 to 64) registered with primary care.

14. An RCGP Course on Hepatitis B and C is available to help raise awareness in primary care and among other professionals working with groups at high risk of viral hepatitis infection (12). By 12 April 2021 more than 3,200 individuals had completed the e-learning module (29). Other downloadable resources are available, like those accessible via the International Network on Hepatitis in Substance Users.

15. PHE in partnership with NHS England and HM Prison and Probation Service (HMPPS) have overseen the rollout of BBV testing, primarily at reception, in adult prisons on an ‘opt-out’ basis. The challenge moving forward is increasing and sustaining BBV testing levels to within the upper NHS England performance standard.

16. The NHS’s DAA procurement deal (60) includes significant investment in localised testing and treatment services for those in secure and detained settings (including prisons and immigration removal centres), including the HITT, a whole prison testing programme. Peer support and point of care testing approaches help to provide a rapid diagnosis of infection, which when combined with early access to pan-genotypic treatments, allows immediate initiation of treatment and the possibility of clearing HCV from the prison estate (see Appendix 3 section 15).

17. NHS England have funded 10 community vans to support safe community working across ODNs in England. These and other independently funded vans focus on areas of high health inequality and offer testing (and treatment) to patients from various backgrounds such as those who sleep rough, asylum seekers, sex workers, MSM and PWID.

18. NHS England is currently piloting HCV testing in 12 emergency departments across England.

19. Led by 2 South Asian peers and in partnership with community leaders, the NHS England elimination programme is aiming to raise awareness of HCV, and undertake testing events in South Asian communities in mosques and other community settings.

20. NHS England have been working with the British Liver Trust’s Love Your Liver Roadshows to offer hepatitis C testing to people when they are offered a liver health screen.
Prevention of infection by ensuring adequate harm reduction for PWID

Given that infection control measures are already in place to prevent transmission of HCV in healthcare settings, and the blood supply is routinely screened for HCV (see Appendix 1), the focus of HCV prevention activity in England is to ensure adequate harm reduction measures are in place for PWID to prevent both primary and reinfection following HCV treatment.

Harm reduction interventions for PWID, including access to sterile injecting equipment via NSP and effective drug dependence treatment, can prevent and control HCV transmission among PWID (64 to 70). Specifically, OST is associated with a reduction in injecting and thus risk of HCV acquisition, which is strengthened when used in combination with NSP (70). Likewise, provision of LDSS through drug services is recommended by the NICE(10) as an acceptable strategy for reducing HCV transmission among PWID as, after use, LDSS retain less blood than traditional syringes with a higher dead space (71). Therefore, optimal access to clean injecting equipment and OST as well as targeted information on HCV, are important in curbing the spread of HCV.

Data on harm reduction interventions for PWID is available from the UAM Survey and the NDTMS (see Appendix 2).
<table>
<thead>
<tr>
<th>Service coverage or programme target area</th>
<th>WHO EURO 2020 targets (6)</th>
<th>WHO GHSS 2030 target (3)</th>
<th>WHO interim guidance elimination validation target (2)</th>
</tr>
</thead>
</table>
| Harm reduction: A comprehensive package of harm reduction services to all PWID (72) including: | • at least 200 sterile needles and syringes provided per person who injects drugs per year  
   • at least 40% of opioid dependent PWID receive OST  
   • 90% of PWID receiving targeted HCV information, education and communication | At least 300 sterile needles and syringes provided per person who injects drugs per year. | At least 300 sterile needles and syringes provided per person who injects drugs per year. |

**Progress in England**

Harm reduction: A comprehensive package of harm reduction services to all PWID (72) including:

- among people injecting psychoactive drugs participating in the UAM Survey during 2020, 62.7%† reported adequate NSP for their needs (66.1% in 2019)
- 55.5% of opioid dependent PWID receive OST (tax year 2011 to 2012*)
- 75.8%† of UAM Survey participants in 2020 (79.9% in 2019), who had injected drugs in the last year, reported receiving some form of information that explained what HCV is, how they could avoid catching it, or how it is treated, in the last year

* Analysis of injecting drug use prevalence is under development to provide updated, robust estimates of the number of PWID and the proportion on OST.
† 2020 figures are provisional due to the impact of COVID-19 on national bio-behavioural surveys of BBV in PWID in 2020 (UAM Survey).
Overall, earlier data shows that the WHO target for at least 40% of opioid dependent PWID to be receiving OST by 2020 seems to have been met in England, although recent data is awaited to confirm that this is still the case. While evidence show that the majority of PWID may be able to access NSP to some degree (41, 73) current provision is sub-optimal (around 2 in 3 report adequate provision for their needs) and more needs to be done to ensure universal adequate provision. There is a paucity of evidence of NSP coverage through alternative NSP routes, such as pharmacy NSP, and more needs to be done to understand NSP provision in these settings. The amount and type of equipment provided needs to be scaled up, with an emphasis on increasing the availability of LDSSs; provision needs to be more accessible and targeted, and transmission risks should be emphasised among PWID in order to enable them to take steps to mitigate these risks (around one in 4 report that they had not received any information about HCV in the last year). There is no evidence of any fall in sharing of injecting equipment over the last decade, with a suggestion that sharing may have risen during the COVID-19 pandemic. It will be important to evaluate the impact of changes in NSP provision that took place during COVID-19 lockdowns with further investigation required to assess their impact on health inequalities.

To help address some of these issues, NHS England have a programme of work which includes an evidence review of the barriers and facilitators to provision of LDSSs, design of a template to standardise commissioning of LDSSs, signposting to training for service users and commissioners, the creation of engagement resources on harm reduction for inclusion in needle and syringe packs, and work with NICE to refresh existing guidelines on LDSS provision.

**Proportion of PWID in drug treatment (WHO programme target)**

The action plan for the health sector response to viral hepatitis in the WHO European region (6) calls for at least 40% of opioid dependent PWID to be receiving OST by 2020, a figure already estimated to have been exceeded in England with 55.5% receiving OST in 2011 to 2012 (1, 7, 29). (see Appendix 3 section 16). Updated estimates are awaited to confirm that this remains the case.

**Number of current and past PWID in drug treatment**

In drug services, a decreasing number of people who report ever injecting drugs are seen, and a decreasing number report current injecting drug use, with the fall in numbers greatest among those who are newly presenting to treatment. During tax year 2019 to 2020, 93,114 adults who had ever injected drugs were in drug treatment, a decrease of 11.6% on the number in tax year 2015 to 2016 (n=105,346) (1). This fall is against the backdrop of an overall fall in drug
treatment numbers from 203,808 to 196,087 (3.8%) (1) over the same period. Of these, 42.0% (39,141 out of 93,114) reported currently injecting drugs, a fall of 2.3% on the number in tax year 2015 to 2016 (46,727 out of 105,346; 44.4%) (1). In the subset who were newly presenting to drug treatment, a decrease in the number of people in drug services who report ever injecting drugs of 11.5% was observed to 26,506 in tax year 2019 to 2020 from 29,958 in tax year 2015 to 2016 (1). Of these, 37.6% (9,961 out of 26,506) reported current injecting, a fall of 2.4% on the number in tax year 2015 to 2016 (11,963 out of 29,958; 39.9%) (1). This suggests that the prevalence of current injecting among those attending drug services who report ever injecting is falling and that the fall is most marked in those newly engaged with drug services; this might be expected as the number of opiate users in the population falls along with the number seeking treatment.

**NSP coverage (WHO programme target) and provision of LDSS**

In Europe, high NSP coverage has been shown to be associated with a reduction in the risk of HCV acquisition (70), with NSP being a highly effective, low-cost, intervention that can be cost saving in certain settings (74).

The WHO Europe viral hepatitis action plan (6) and the GHSS on viral hepatitis (3) call for comprehensive harm reduction services to be in place for all PWID, including a major global increase in provision and availability of sterile needles and syringes, from an estimated baseline of 20 needles and syringes per PWID per year to 200 by 2020 and 300 by 2030 (3) (see Appendix 1). However, these inevitably somewhat arbitrary figures do not make any allowance for individual differences in need or secondary distribution. In order to better reflect the adequacy of needle and syringe provision, data from the UAM Survey of PWID (4) is presented here on self-reported adequacy of needle and syringe provision among those injecting psychoactive drugs (Figure 8). In this metric, needle and syringe provision is considered ‘adequate’ when the reported number of needles received, met or exceeded the number of times the individual injected in the past month.

Among people injecting psychoactive drugs participating in the UAM Survey during 2020, 62.7% (95% CI 56.2 to 68.8) reported adequate NSP for their needs (66.1% in 2019; 95% CI 62.6 to 69.4) (1), that is, the reported number of needles received met, or exceeded, the number of times the individual reported injecting in the past month. This is similar to levels reported in the previous 3 years (P>0.3; Figure 8). This data should be interpreted cautiously as more than one needle is often required per injection as needles may also be used during drug preparation and an injection may require several attempts (and therefore needles) to access a vein. In 2019 and 2020, 60.2% and 61.6% of those who injected in the last month respectively, reported having to make multiple attempts before successfully accessing a vein the last time they injected.
Figure 8. Estimated proportion of people injecting psychoactive drugs reporting adequate* needle and syringe provision in England, 2011 to 2020 (bars represent 95% CI)

A new UAM indicator was introduced in 2017 meaning that data from 2017 onwards cannot be directly compared with that from earlier years (see** and methodology in Appendix 3 section 17)

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¶ Due to limitations in recruitment as a result of the COVID-19 pandemic, 2020 data is provisional.
* Needle and syringe provision is considered ‘adequate’ when the reported number of needles received, met or exceeded the number of times the individual reported injecting.
**Questions around NSP access were updated to reflect changes in NSP provision that have been observed nationally and to incorporate information on secondary distribution of injecting equipment occurring among this population. Prior to 2017, participants in the UAM Survey were asked how many needles they collected per month, and from 2017 onwards they were asked to report the frequency of NSP visits per month and the number of needles collected per visit for themselves and for others. As a result, the indicator from 2017 onwards is not directly comparable to previous years.
Recent evidence suggests the provision of LDSS as an alternative to traditional needles is likely to be a cost-saving strategy for reducing the transmission of HCV in the UK (75). In 2019, of the 58 (of 89) sites providing NSP who took part in the UAM Survey and completed this information, 34 (58.6%) stated that they provided LDSSs. Although over half of responding sites provide LDSS, scaling up of provision of LDSS is required in line with current guidance (76) in order to ensure availability for all those who wish to use them.

In England, staff at UAM Survey sites were surveyed in September 2020 to understand service provision during the COVID-19 lockdown. When asked about current provision of NSP and OST services compared to the previous year, respondents did not report a significant drop in provision, and two-thirds of sites (66.7%; 22 out of 33) said they had adopted novel approaches to NSP delivery (for example, home delivery, provision by post, and peer supported distribution) during lockdown. However, provisional UAM Survey findings indicate that one in 4 PWID have found it more difficult to access injecting equipment in 2020, than in 2019 (31).

### Sharing of injecting equipment and associated paraphernalia by PWID

Sharing of injecting equipment and associated paraphernalia is the main route of transmission of infection among PWID. Injection equipment sharing includes the sharing of needles and syringes (direct sharing) and sharing of other injecting paraphernalia such as filters and spoons (indirect sharing).

In 2020, 24.1% of people reporting currently injecting psychoactive drugs (in the last month) and participating in the UAM Survey, reported direct sharing of needles and syringes (20.4% in 2019; Figure 9). Levels in 2020 are significantly higher than seen in 2011 (17.4%; p=0.004), which may be the result of differences in the geographical distribution or risk profile of the relatively smaller 2020 UAM Survey sample, or may flag an increase in risk behaviour during the COVID-19 pandemic. When including the sharing of mixing containers or filters as well as needles and syringes, the proportion of those that reported direct and indirect sharing in 2020 was 42.8% (36.3% in 2019; Figure 9) (1, 4, 29).

### Targeted HCV information for PWID (WHO programme target)

The WHO Europe Viral Hepatitis Action Plan calls for at least 90% of PWID to be receiving targeted HCV information, education, and communications by 2020 (20). In the UAM Survey participants were asked if they had received any information in the last year that explained what HCV is, how they could avoid catching it or how it is treated. In 2020, 75.8% reported receiving any element of the aforementioned information with regards to HCV (79.9% in 2019) (1). This proportion is lower (71.2 %) among UAM Survey participants who reported that they had not injected in the last year (76.5 in 2019) (1), although not significantly so (P>0.05).
Figure 9. Trends in the sharing of injecting equipment and associated paraphernalia in the preceding 4 weeks among people injecting psychoactive drugs in England, 2011 to 2020 (bars represent 95% CI)


† Due to limitations in recruitment as a result of the COVID-19 pandemic, 2020 data is provisional.
‡ Self-reported sharing of needles and syringes in preceding 4 weeks.
$ Self-reported sharing of needles, syringes and other injecting paraphernalia (that is, spoons or filters) in the preceding 4 weeks.
Monitoring trends in HCV diagnosis and testing in the general population and risk groups

HCV testing and treatment assessment should include the availability of quality screening, confirmatory testing and health sector-wide linkage to hepatitis care and treatment for all individuals testing positive. These programmes should be designed to ensure that vulnerable populations are not missed and that prevention is embedded.

Trends in HCV diagnosis and testing are useful for monitoring:

• levels of HCV infection in the general population and in important risk groups
• HCV positivity in the tested population
• the impact of awareness raising initiatives, prevention activity and COVID-19
• the frequency and reach of HCV testing

This, in turn, helps to track national progress in controlling the infection. Monitoring HCV in blood donors, who are less likely to have bloodborne virus infection, is also useful for identifying new groups of individuals who may be at risk of infection.

NICE public health guidance exists to help focus activity to ensure that more people at increased risk of HCV (and HBV) infection are offered testing (13).

Data for testing and diagnosis monitoring is available from a variety of surveillance systems (see Appendix 2):

• the UAM Survey of PWID (4)
• SSBBV testing (32)
• Laboratory Reporting (via SGSS) (36)
• the NDTMS
• the NHSBT and UKHSA Epidemiology Unit Blood Donor Surveillance Scheme
• GUMCAD
• HARS
• the H&J SRU
• the PPG/Gilead hepatitis C dashboard

New laboratory confirmed diagnoses of HCV in England

Between 2010 and 2019, there has been an over 90% (94.5%) increase in the number of individuals with new laboratory confirmed diagnoses (36) of HCV infection in England (Figure)
10) (1, 29). However, a 33.3% decrease was observed from 15,848 reports in 2019 to 10,563 in 2020, likely due to COVID-19 pandemic restrictions (Figure 10) (1, 24). Since 2017 more than 30% of tests are from DBS samples. Although de-duplication procedures have been undertaken to prevent double counting of individuals, the quality of reports is such that linking is unlikely to be complete. As such, a proportion of the laboratory confirmed diagnoses classified as new will not be; they simply appear to be because identifiers are inadequate to link to previous HCV positive tests for the same individual.

Between 2010 to 2020, of all laboratory reports, 95.9% reported sex and 97.1% reported age. Of these around two-thirds (69.8%) were in men and just under half (46.2%) were in individuals aged between 30 and 44 years (see Appendix 3 section 18 and Figure 36).
Figure 10. Number of laboratory reports* of HCV from England: 2010 to 2020**

Data source: SGSS (36).

* Laboratory reports include positive test results for HCV antibody and/or HCV RNA. 2020 data is provisional and figures for previous years are subject to change as a result of late reporting and the associated de-duplication procedure. The nature of laboratory reporting and the associated de-duplication procedure is such that reinfections are not captured. In addition, patient identifiable data submitted by NHS laboratories is variable, particularly from sexual health and drug and alcohol services, which limits the ability to deduplicate. Results for children under one year of age are excluded to rule out the likelihood of simply detecting maternal antibody.

** HCV DBS testing data from 2011 onwards has now been obtained and included from additional laboratories, resulting in an increase in the overall number of HCV reports.
HCV testing in primary care and the wider population

Data on HCV testing in primary care and the wider population is available from SSBBV testing (see Appendix 2).

Overall, data shows that HCV testing increased in primary care and the wider population between 2015 and 2019, with a sharp fall in 2020, likely due to COVID-19 restrictions. Between 2015 and 2020, anti-HCV test positivity remained relatively stable in the wider population at around 2.6% and at around 1.7% (1) in those requested via primary care. Data suggests that in 2020 around one in 7 people testing anti-HCV positive had no subsequent HCV RNA test, and among those who did, one in 5 had their HCV RNA test recorded more than one week after HCV antibody testing, suggesting that reflex testing had not taken place using the initial sample.

Trends in testing were analysed using data from 19 sentinel laboratories where complete and consistent data was available from January 2015 to December 2020 (Figure 11) (1) (see Appendix 3 section 19) (29). The number of individuals tested rose by 60.7% between 2015 and 2019, but fell by 33.5% between 2019 and 2020, likely due to COVID-19 pandemic restrictions (Figure 11) (1, 24). Anti-HCV test positivity among those tested remained relatively stable between 2015 and 2020 at around 2.6% (range 2.3% to 2.8%; Figure 11) (1).

It is important that all individuals who test positive for HCV antibody undergo HCV RNA testing to identify those with current infection who require referral for treatment. Over the period 2015 to 2020, just 82.8% of the people testing positive for anti-HCV in sentinel surveillance had a subsequent RNA or antigen test (ranging from 78.9% to 86.2% over the 6 years) and 80.3% of the HCV RNA/antigen tests were known to have been conducted within a week of the anti-HCV positive test result, with little difference over the 6 years (81.6% in 2020). This data suggests that more needs to be done to improve the coverage of reflex testing to ensure that everyone who tests positive for HCV antibody, is automatically tested for HCV RNA to promptly identify those with current infection that require referral for treatment.

Testing in GP services is important if we are to find those with undiagnosed infection who are not in contact with other services, like drug services, that routinely offer HCV testing. In sentinel laboratories (32) the number of individuals tested via GP surgeries increased by 43.3% between 2015 and 2019 (1), a proportion of which will be driven by requests from other services via shared care. However, a 35.8% decrease was observed between 2019 and 2020, likely due to COVID-19 pandemic restrictions (1, 24). The proportion of tests conducted via GP surgeries identified as anti-HCV positive declined from 2.0% in 2015 to 1.5% in 2019 and 2020 (1). This is consistent with expanding testing programmes, which often result in larger numbers of individuals at relatively lower risk of infection being tested (Figure 12).
Figure 11. Number of individuals tested for anti-HCV by year, and proportion positive, in 19 sentinel laboratories: 2015 to 2020*.†

Data source: Sentinel Surveillance of Bloodborne Virus Testing (32).

* Excludes samples collected outside routine testing such as look back studies, reference testing, and children aged <1 year. Patient identifiable data submitted by laboratories is variable, particularly from sexual health and drug and alcohol services, which limits the ability to de-duplicate. Data is de-duplicated subject to availability of date of birth, Soundex, NHS number and first initial. The proportion positive is calculated using number of individuals tested. Numbers include venous and DBS testing, with retrospective DBS data added from 2014.

** Includes all tests until a person is diagnosed positive, no tests are counted after a positive test, a person can be counted more than once.

† Trend data does not reflect cumulative data as only locations that have consistently reported during the 5 years presented are included in trend data to remove any artificial changes in testing.

‡‡ The positive result is the first reported by participating laboratories and may not reflect an individual's first diagnosis.
Figure 12. Number of individuals tested for anti-HCV by year, and proportion positive, through GP surgeries in 19 sentinel laboratories: 2015 to 2020*,†

Data source: Sentinel Surveillance of Bloodborne Virus Testing (32).

* Excludes samples collected outside routine testing such as look back studies, reference testing and children aged under one year. Patient identifiable data submitted by NHS laboratories is variable, particularly from sexual health and drug and alcohol services, which limits the ability to deduplicate. Data is deduplicated subject to availability of date of birth, Soundex, NHS number and first initial. The proportion positive is calculated using number of individuals tested. Numbers include venous and DBS testing, with retrospective DBS data added from 2014.

** Includes all tests until a person is diagnosed positive, no tests are counted after a positive test, a person can be counted more than once.

† Trend data does not reflect cumulative data as only locations that have consistently reported during the 5 years presented are included in trend data to remove any artificial changes in testing.

†† The positive result is the first reported by participating laboratories and may not reflect an individual’s first diagnosis.
HCV testing in people who inject drugs and/or attend drug and alcohol services

Data on HCV testing in people who inject drugs is available from the UAM Survey, the NDTMS and SSBBV testing (see Appendix 2).

Overall, data from the UAM Survey (2020) and the NDTMS (tax year 2019 to 2020) (29) both show that around 85% of PWID report ever having had an HCV antibody test (1).

SSBBV testing data suggests that HCV testing in drug services more than doubled between 2015 and 2019 (102.1% increase), and NHS England elimination initiatives aimed at this important risk group are likely to have contributed to this increase (See Appendix 3 section 20) (1). In 2020, a considerable decrease in HCV testing was observed (61.7%), likely due to COVID-19 restrictions (Figure 14) and to increased use of point-of-care testing in outreach work that is not fully captured in surveillance data. SSBBV testing suggests that around one in 5 individuals test anti-HCV positive (between 2015 to 2019), although the proportion testing positive rose to one in 4 in 2020 (Figure 14) (1), suggesting more targeted testing of those at greater risk of infection took place during the COVID-19 pandemic.

NDTMS data also supports increased levels of HCV testing among adults in treatment for drug and alcohol use, with an increasing proportion of those eligible for testing, having an HCV test recorded (rising from 43.2% in tax year 2009 to 2010 to 68.0% in tax year 2019 to 2020) (1, 29). This increase is also observed in the subset who report ever having injected drugs, where testing levels rose from 56.9% in tax year 2009 to 2010 to 85.7% in tax year 2019 to 2020 (1, 29). Similarly, rises in levels of HCV testing are observed among adults newly presenting to drug and alcohol treatment who are eligible to receive a test (a rise from 37.1% in tax year 2009 to 2010 to 52.2% in tax year 2019 to 2020), although the increases are not so great, and levels of HCV testing among those who report ever injecting drugs newly presenting to treatment have not increased, remaining stable at around 75% over the last 5 years (1, 29). This suggests that HCV testing is increasing among all people who attend drug and alcohol services, but at a reduced rate in those newly presenting for treatment. HCV testing levels are lower overall than in those who report an injecting risk, as would be expected when current testing policy is risk-based (14). These HCV testing increases are encouraging, although more needs to be done to raise levels of HCV testing further, especially in those newly presenting to treatment.

NDTMS data shows that more than 4 in 5 adults in treatment are offered HCV testing. The higher levels of test acceptance observed in those with an injecting risk (63.4% vs 55.2% among all adults in drug and alcohol treatment services; and 53.4% vs 46.5% among all adults newly presenting to treatment) (1, 29), suggests that service attendees are aware of the increased risk of acquiring HCV that is associated with injecting drugs.
In the UAM Survey, an increase in the proportion reporting an HCV test in the current or previous year from 41.8% in 2011 to 48.9% in 2020 (Figure 13) (1), suggests that people are testing more frequently than in earlier years. It is notable that UAM data for 2020 suggests that around 31.4% of people reported having their most recent HCV test outside drug services (18.6% via prison healthcare and 7.5% via their general practitioner).
Figure 13. Trends in self-reported uptake of testing for HCV infection among PWID in England: 2009 to 2020


¶ Due to limitations in recruitment as a result of the COVID-19 pandemic, 2020 data is provisional.
Figure 14. Number of individuals tested for anti-HCV by year, and proportion positive, through drug services in 19 sentinel laboratories: 2015 to 2020*, †

Data source: Sentinel Surveillance of Bloodborne Virus Testing (32).
* Excludes samples collected outside routine testing such as look back studies, reference testing and children aged under one year. Patient identifiable data submitted by NHS laboratories is variable, particularly from sexual health and drug and alcohol services, which limits the ability to deduplicate. Data is deduplicated subject to availability of date of birth, Soundex, NHS number and first initial. The proportion positive is calculated using number of individuals tested.
Numbers include venous and DBS testing, with retrospective DBS data added from 2014.
** Includes all tests until a person is diagnosed positive, no tests are counted after a positive test, a person can be counted more than once.
† Trend data does not reflect cumulative data as only locations that have consistently reported during the 5 years presented are included in trend data to remove any artificial changes in testing.
†† The positive result is the first reported by participating laboratories and may not reflect an individual’s first diagnosis.
HCV testing among people in secure and detained settings

HCV affects a larger proportion of people in prison and other secure and detained settings than in the wider population, principally as a result of the relatively higher levels of injecting drug use that are observed among this population (30). NHS England elimination initiatives are in place involving the whole criminal justice pathway, including probation with a significant programme of work in prisons. This involves whole population HITT sessions in both settings and ensuring robust BBV opt-out reception testing policies are implemented across the English prison estate.

Data on HCV testing among people in secure and detained settings (including prisons, immigration removal centres, secure training centres, secure children’s homes and young offenders institutes) is available from:

- the H&J SRU
- the SSBBV testing (see Appendix 2)
- the PPG/Gilead hepatitis C dashboard (PPG is an independent provider of NHS services to prisoners commissioned by NHS England which covers 40% of the 118 English prisons)

Overall, data shows an increased awareness of HCV across secure and detained settings, with a more than 6-fold increase in HCV testing between 2015 and 2019, and falls in 2020, likely due to COVID-19 pandemic restrictions. Data suggests that levels of offer and uptake of HCV testing varied across the prison estate, and testing remains sub-optimal with around 40% getting tested for anti-HCV within 14 days of reception. However, overall number of tests may be higher as only tests undertaken within 14 days of reception are reported in H&J SRU data. The proportion testing anti-HCV positive is lower than in previous years (8) at around 4% in 2020 compared to tax year 2020 to 2021. This is not surprising with the change to whole population, rather than risk-based targeted, testing. HITT initiatives may also be starting to drive HCV infection down in the prison estate. Working within the 14-days of reception window, data suggests that only one third of those who test anti-HCV positive were tested for HCV RNA and of these, 14.3% tested positive for HCV RNA. These levels of HCV RNA testing are well below desired 100% level, although numbers tested may appear artificially low as testing and results outside the 14-day post-reception testing window are not captured.

Prison Health Performance and Quality Indicators (PHPQIs), Health and Justice Indicators of Performance (HJIPs) and recent data from the H&J SRU have shown a rise in HCV tests performed among new receptions to secure and detained settings from 5.3% in tax year 2010 to 2011 to 38.0% in tax year 2019 to 2020. This fell to 36.6% in tax year 2020 to 2021, likely due to COVID-19 pandemic restrictions (Figure 15) (1). It is likely that increases in testing are due to the introduction of BBV opt-out reception testing which was agreed in October 2013 by PHE, NHS England and HMPPS (77) and HITT initiatives that have taken place in tax year
2019 to 2020 (n=11) and tax year 2020 to 2021 (n=9). While this increase in testing is welcomed, current levels are still below the minimum BBV testing threshold proposed by NHS England (50 to 74%), and well below the target threshold of at least 75% uptake, which may be partly because of high prisoner turnover across the estate. Levels of testing are variable across secure and detailed settings. For example, levels of HCV testing among all new receptions were higher among the 48 prisons receiving NHS services via PPG (45.3% in tax year 2020 to 2021, data not shown) than the national average (36.6%; Figure 15) (1).
Figure 15. Proportion of new receptions to secure and detained settings tested for HCV: from tax year 2010 to 2011 up to tax year 2020 to 2021*

Data source: Prison Health Performance Quality Indicators (PHPQIs, NHS Trust Development Agency: palest blue Bars), Health and Justice Indicators of performance (HJIPs, dark teal bars), and the Health and Justice Strategic Reporting Unit’s Health and Justice Information System data (H&J SRU, light teal bars).
* People previously identified as HCV positive at the reception screen and those with codes indicating resolved HCV infection, are excluded.
** Figures above bars are the number of secure and detained settings providing data over total number of secure and detained settings (numbers change due to closures and are not available for tax years 2015 to 2016 and 2016 to 2017).
*** Robust data not available for the first year following introduction of HJIPs.
† HJIPs provide data for prisons only.
†† Anti-HCV tests undertaken within 14 days of reception (includes new receptions and transfers).
Performance in relation to BBV testing is measured at the prison level by NHS England through the collection of data via the H&J SRU. This data is used by NHS England commissioners to performance manage healthcare providers in prisons and are important for identifying potential attrition points in the testing and treatment pathway. In the tax year 2020 to 2021, H&J SRU data suggests that, after excluding previously confirmed cases, 85.5% of new receptions and transfers from secure and detained settings were offered anti-HCV testing within 7 days of reception and of these 42.8% were tested within 14 days of reception (Figure 16). Of those tested, 3.6% were anti-HCV positive (Figure 16). Working within the 14-days of reception window, data suggests that only 32.3% of those who test anti-HCV positive were tested for HCV RNA and of these, 14.3% tested positive for HCV RNA. These levels of HCV RNA testing are well below desired 100% level, although numbers tested may appear artificially low as testing and results outside the 14-day post-reception testing window are not captured. While data is not available to report how many of these individuals in the testing cascade were referred for specialist HCV treatment, data from all secure and detained settings (excluding those previously positive at the reception screen and without a code indicating resolved HCV infection), show that 47.6% of all those testing HCV RNA positive in tax year 2020 to 2021 received a specialist referral. Variation in HCV testing is observed across secure and detained settings, for example in tax year 2020 to 2021, reception testing uptake among those offered testing was higher among prisons receiving NHS services via PPG (60.5%) than in secure and detained settings nationally (42.8%, Figure 16).

Data from SSBBV testing (32) suggests that the number of individuals tested via prison services rose dramatically by 626.6% between 2015 and 2019 (Figure 17) (1). This increase largely occurred between 2017 and 2019, with a 42.7% decrease observed in 2020 (1). Data from the H&J SRU (Figure 15) and from the 48 prisons receiving NHS services from PPG (12.1% fall in 2020, data not shown) suggests falls in 2020 may be lower than suggested by SSBBV testing, which could be because point of care testing is not fully captured in SSBBV testing. Improved uptake of opt-out testing, alongside HITTs that took place in tax years 2019 to 2020 (n=11) and 2020 to 2021 (N=9) are likely to be responsible for increases in HCV testing. SSBBV testing data suggests that the proportion of individuals tested via prison services identified as anti-HCV positive declined from 9.7% in 2015 to 4.8% in 2019, and to 3.9% in 2020 (Figure 17) (1). This decrease is not surprising with the change to whole population testing rather than targeted testing of the groups at highest risk of infection.
Figure 16. HCV testing cascade in secure and detained settings, tax year 2020 to 2021

Data source: H&J SRU; PPG/Gilead hepatitis C dashboard.

* People previously identified as HCV positive at reception and those with codes indicating resolved HCV infection, are excluded (H&J SRU data only).
† Within 7 days of reception (H&J SRU data only).
†† Within 14 days of reception (H&J SRU data only).
Figure 17. Number of individuals tested for anti-HCV by year, and proportion positive, through prisons in 19 sentinel laboratories: 2015 to 2020*, †

Data source: Sentinel Surveillance of Bloodborne Virus Testing (32).

* Excludes samples collected outside routine testing such as look back studies, reference testing and children aged under one year. Patient identifiable data submitted by NHS laboratories is variable, particularly from sexual health and drug and alcohol services, which limits the ability to deduplicate. Data is de-duplicated subject to availability of date of birth, Soundex, NHS number and first initial. The proportion positive is calculated using number of individuals tested. Numbers include venous and DBS testing, with retrospective DBS data added from 2014.

** Includes all tests until a person is diagnosed positive, no tests are counted after a positive test, a person can be counted more than once.

† Trend data does not reflect cumulative data as only locations that have consistently reported during the 5 years presented are included in trend data to remove any artificial changes in testing.

†† The positive result is the first reported by participating laboratories and may not reflect an individual’s first diagnosis.
HCV testing in those who have experienced homelessness

There is evidence of an association between being homeless and an increased risk of problematic drug use, particularly among people who sleep rough and night shelter residents (78). This puts certain people who experience homelessness at increased risk of HCV infection.

Data on HCV among people who experience homelessness is available from the UAM Survey, and SGSS which, when combined with data from the Department for Levelling Up, Housing and Communities annual Rough Sleeping Snapshot, can inform levels of HCV infection in this vulnerable population (see Appendix 2).

Overall in 2020, HCV infections among people experiencing homelessness represent a decreased proportion of all laboratory reports of HCV infection in 2020 (around 3.2% in 2020, compared to an average of 6.8% in 2014 to 2019), with latest data suggesting levels of reported diagnosed HCV infection to be around 25.4% in 2020 among people with rough sleeping reported (1). Data from the UAM Survey suggests that levels of chronic HCV infection fell to around 21.4% among PWID who report currently experiencing homelessness in 2020 from at least 30% in 2015 to 2019. This level was not significantly higher than in those who had been previously homeless (13.4%; p=0.113) or those who had never experienced homelessness (13.7%; p=0.156), although 2020 UAM data is provisional and should be treated cautiously (1). Prior to 2020, chronic prevalence among PWID reporting current homelessness remained relatively stable at around 32% (range: 29.3 to 35.5; p=0.597, see Figure 18) (1). This might suggest that recent initiatives to find and treat HCV in those experiencing homelessness during the COVID-19 pandemic (59) are having an effect. However, given the difference in geographical distribution of the samples collected in 2020 during the COVID-19 pandemic, the change in risk profile of participants and the smaller sample size, the extent of changes to chronic HCV prevalence should be interpreted with caution, 2020 data is provisional (4).

During the period 2014 to 2019, the proportion of laboratory reports of HCV that were among individuals with homelessness indicated (see methodology in Appendix 3 section 21), averaged 6.8% (Figure 19) with levels falling to 3.2% in 2020 (P=0.120) (1). Preliminary estimates suggest that the proportion of people who sleep rough with reported diagnosed HCV infection was 25.4% in 2020, similar to levels in 2016 and 2019 (26.9% in 2019). Levels were at their highest (32.1%) in 2017 (Figure 19) (1). Levels of ever having HCV infection (27.3% in 2020, 27.2% in 2019) are lower than in the UAM Survey (62.7% in 2020, 59.3% in 2019) because the UAM Survey focuses solely on those with an current or past injecting risk, rather than all individuals who are rough sleeping, regardless of their injecting status.
Figure 18. Trend in HCV prevalence* among PWID reporting homelessness in the last year in England: 2011 to 2020 (bars represent 95% CI)

Data source: Unlinked Anonymous Monitoring Survey of people who inject drugs in contact with specialist services (4).

* Estimates for chronic and cleared HCV infection have been adjusted to take into account anti-HCV positive samples with missing RNA status. The ratio of chronic or cleared infection was applied to the anti-HCV positive samples with missing RNA status by year and region.

¶ Due to limitations in recruitment as a result of the COVID-19 pandemic, 2020 data is provisional.
Figure 19. Laboratory reports* of HCV among those homeless or rough sleeping in England: 2014 to 2020

Data source: SGSS (79); Department for Levelling Up, Housing and Communities, Communities and Local Government (Rough Sleeping Snapshot: number of people sleeping rough on a single night in autumn in England 2014 to 2020).

* Laboratory reports include positive test results for HCV antibody and/or HCV RNA; 2020 data is provisional and figures for previous years are subject to change as a result of late reporting and the associated de-duplication procedure. The nature of laboratory reporting and the associated de-duplication procedure is such that reinfections are not captured. In addition, patient identifiable data submitted by NHS laboratories is variable, particularly from sexual health and drug and alcohol services, which limits the ability to deduplicate. Results for children under one year of age are excluded to rule out the likelihood of simply detecting maternal antibody.

** Indicators for homelessness are based on the no fixed abode (NFA) code in the NHS spine allocated to individuals at time of first diagnosis; this indicator could be subject to underreporting, misclassification and/or changes in reporting practice over time.

*** People sleeping rough are defined as "People sleeping, about to bed down (sitting on, in or standing next to their bedding) or actually bedded down in the open air (such as on the streets, in tents, doorways, parks, bus shelters or encampments). People in buildings or other places not designed for habitation (such as stairwells, barns, sheds, car parks, cars, derelict boats, stations, or 'bashes' which are makeshift shelters, often comprised of cardboard boxes)". The definition does not include people in hostels or shelters, people in campsites or other sites used for recreational purposes or organised protest, squatters or travellers. Bedded down is taken to mean either lying down or sleeping. About to bed down includes those who are sitting in, on or near a sleeping bag or other bedding. These figures are subject to some uncertainty and should be treated as estimates of the number of people sleeping rough on a single night and an indication of trends over time. There are a range of factors that can impact on the number of people seen or thought to be sleeping rough on any given night such as the weather, where people choose to sleep, the date and time chosen, and the availability of alternatives such as night shelters.
HCV testing in South Asian and other minority ethnic populations

Certain minority ethnic populations originate from countries where HCV is endemic or where HCV levels are higher than in England.

Data on HCV testing in South Asian and other minority ethnic populations is available from SSBBV testing and blood donor testing data (NHSBT and UKHSA Epidemiology Unit) (see Appendix 2). In SSBBV testing (32) ethnicity is assigned using information from laboratory reports, and supplemented using name analysis software (Nam Pehcham (80) for South Asian populations and ONOMAP for South Asian and other populations (81)) when ethnicity is not reported.

Overall, data shows that HCV testing increased between 2015 and 2019 by 66.0% in South Asian populations (Figure 20) and by 103.4% in Eastern European populations (Figure 21), with sharp falls in testing of around 30-35%, likely due to COVID-19 pandemic restrictions (29.6% fall in the South Asian population, and 34.6% fall in the Eastern European population) (1). The proportion testing positive fell from 1.5% to 1.0% in the South Asian population and from 4.5% to 3.1% in the Eastern European population between 2015 and 2020 (1). The fall in percentage testing positive is consistent with expanding HCV testing in the South Asian population as increasing numbers of individuals at relatively lower risk of infection are tested. Among Eastern Europeans increases to 2019 may partially be a reflection of increased migration from Eastern Europe to the UK over this period. The data also suggests that individuals of Eastern European origin may be at relatively increased risk of having acquired HCV and/or that testing of Eastern Europeans resident in England is more targeted at higher risk individuals than in the wider population.

Higher levels of infection in these populations are also seen in 2020 data from the joint NHSBT and UKHSA Epidemiology Unit, which show rates of confirmed anti-HCV positive donations to be 6-times higher among donors of South Asian ethnicity (76.4 per 100,000 new South Asian donors, see Figure 22) and 5 times higher among donors of White ethnicity who were not White British or Irish (67.6 per 100,000 new other White donors, see Figure 23) than among new blood donors of White British ethnicity (12.4 per 100,000 new White British donors) (see Appendix 3 section 22 for further detail) (1). This suggests that levels of HCV infection are higher among these groups, and/or that levels of awareness of infection are lower than among donors of White British ethnicity (if they are unaware of their infection, they are less likely to self-exclude from donating). Preliminary data from a donor survey and post-donation discussions does not support the hypothesis that people without English as their first language are significantly more likely to misunderstand the Donation Safety Check questions.
Figure 20. Number of individuals tested for anti-HCV by year, and proportion positive, in people of South Asian^ origin in 19 sentinel laboratories: 2015 to 2020*, †

Data source: Sentinel Surveillance of Bloodborne Virus Testing (32).

^ Ethnicity is assigned using information from laboratory reports, and supplemented using name analysis software (Nam Pehcham (80) and ONOMAP (81)) when ethnicity is not reported.

* Excludes samples collected outside routine testing such as look back studies, reference testing, renal patients and children aged under one year. Patient identifiable data submitted by NHS laboratories is variable, particularly from sexual health and drug and alcohol services, which limits the ability to deduplicate. Data is de-duplicated subject to availability of date of birth, Soundex, NHS number and first initial. The proportion positive is calculated using number of individuals tested. Numbers include venous and DBS testing, with retrospective DBS data added from 2014.

** Includes all tests until a person is diagnosed positive, no tests are counted after a positive test, a person can be counted more than once.

† Trend data does not reflect cumulative data as only locations that have consistently reported during the 5 years presented are included in trend data to remove any artificial changes in testing.

†† The positive result is the first reported by participating laboratories and may not reflect an individual’s first diagnosis.
Figure 21. Number of individuals tested for anti-HCV by year, and proportion positive, in people of Eastern European origin^ in 19 sentinel laboratories: 2015 to 2020*,†

Data source: Sentinel Surveillance of Bloodborne Virus Testing (32).

^ Ethnicity is assigned using information from laboratory reports and supplemented using name analysis software (Nam Pehcham (80) and ONOMAP (81)) when ethnicity is not reported.

* Excludes samples collected outside routine testing such as look back studies, reference testing, renal patients and children aged under one year. Patient identifiable data submitted by NHS laboratories is variable, particularly from sexual health and drug and alcohol services, which limits the ability to deduplicate. Data is de-duplicated subject to availability of date of birth, Soundex, NHS number and first initial. The proportion positive is calculated using number of individuals tested. Numbers include venous and DBS testing, with retrospective DBS data added from 2014.

** Includes all tests until a person is diagnosed positive, no tests are counted after a positive test, a person can be counted more than once.

† Trend data does not reflect cumulative data as only locations that have consistently reported during the 5 years presented are included in trend data to remove any artificial changes in testing.

†† The positive result is the first reported by participating laboratories and may not reflect an individual’s first diagnosis.
Figure 22. Donations from new donors of South Asian ethnicity and proportion anti-HCV positive: England, 2010 to 2020*

Data source: NHSBT UKHSA Epidemiology Unit, denominator supplied by NHSBT Donor Insight.

* Includes North Wales to 1 April 2016.

** Exact confidence limits for proportions (82).
Figure 23. Donations from new donors of other White ethnicity* and proportion anti-HCV positive: England, 2010 to 2020**

Data source: NHSBT UKHSA Epidemiology Unit, denominator supplied by NHSBT Donor Insight.

* Other White ethnicity includes donors of White ethnicity who are not White British or White Irish.

** Includes North Wales to 1 April 2016.

† Exact confidence limits for proportions (95% upper and lower confidence limits).
Hepatitis C in England 2022

HCV testing in sexual health services

NICE recommend that SHSs should offer hepatitis C testing to all service users at increased risk of infection (13). Testing for HCV should be offered at least annually to all MSM who are eligible for 3 monthly HIV testing and to those taking or eligible for pre-exposure prophylaxis (PrEP) (83).

In people living with diagnosed HIV, HCV co-infection can lead to faster progression to liver disease (84, 85). In response to increased levels of HCV infection among patients with HIV, the British HIV Association announced ambitious targets for the micro-elimination of HCV in patients with HIV, with the aim of curing HCV in 80% of those co-infected by April 2019, 90% by April 2020, and 100% by April 2021 (86).

Data on HCV testing and diagnosis is available from sentinel SHSs (SSBBV testing) and data on diagnoses rates of HCV is available from all SHSs (GUMCAD) and from HIV services (HARS) (see Appendix 2).

Overall, HCV testing in sentinel SHSs has increased in recent years, although falls have been observed in 2020, likely due to COVID-19 restrictions. Of those tested in sentinel SHSs, around 1.1% test positive for HCV (1), and in all SHSs rates of HCV diagnoses are higher amongst people living with diagnosed HIV infection compared to those untested for HIV or HIV negative. Since 2015, rates of HCV diagnoses have fallen in all individuals attending SHSs, with the greatest falls seen in those who have diagnosed HIV infection. In 2020, of the people living with diagnosed HIV infection and accessing HIV care in England, 0.9% tested positive for either an acute or chronic HCV infection, and HCV co-infection varied by exposure group. NHS England is currently running an opt-out HCV testing pilot (between September 2021 and March 2022) across SHSs in Leicestershire, Shropshire, Staffordshire, and Telford as part of their programme of elimination initiatives and aims to conduct over 20,000 tests, both online and in clinic.

Data from SSBBV testing (32) on the number of individuals tested for HCV in sentinel sexual health services shows an increase of 46.5% in anti-HCV testing between 2015 and 2018, however, a 45.3% decrease is seen between 2018 and 2020 (1). Falls in testing between 2018 and 2020 are partly explained by the scale up of online self-sampling services for BBV, STI, and HIV testing since 2018, and the fact that this activity is not currently captured by SSBBV testing (Figure 24) (24). The fall from 2020 is also likely due in part to COVID-19 restrictions and service reconfiguration that was undertaken in response (87). The proportion of individuals testing anti-HCV positive in sentinel surveillance shows little change between 2015 and 2020, at around 1.1% (range: 1.0 to 1.3%, see Figure 24) (1).
Figure 24. Number of individuals tested** for anti-HCV by year, and proportion positive, through sentinel sexual health services in 19 sentinel laboratories: 2015 to 2020*, †

Data source: Sentinel Surveillance of Bloodborne Virus Testing (32).
* Excludes samples collected outside routine testing such as look back studies, reference testing and children aged under one year. Patient identifiable data submitted by NHS laboratories is variable, particularly from sexual health and drug and alcohol services, which limits the ability to deduplicate. Data is deduplicated subject to availability of date of birth, Soundex, NHS number and first initial. The proportion positive is calculated using number of individuals tested. Numbers include venous and DBS testing, with retrospective DBS data added from 2014.
** Includes all tests until a person is diagnosed positive, no tests are counted after a positive test, a person can be counted more than once.
† Trend data does not reflect cumulative data as only locations that have consistently reported during the 5 years presented are included in trend data to remove any artificial changes in testing.
†† The positive result is the first reported by participating laboratories and may not reflect an individual’s first diagnosis.
GUMCAD is the mandatory surveillance system for STIs in England, and holds data on all STI tests, diagnoses and services from all commissioned SHSs in England (88). GUMCAD data is important as it includes data from services commonly accessed by key populations at an increased risk of HCV infection, including gay, bisexual and other MSM, including those who are living with HIV (13, 89).

In 2020, rates of HCV diagnoses were higher amongst those with diagnosed HIV infection (112.8 per 100,000 among MSM, and 74.4 among all attendees) than in those who were HIV negative or of unknown HIV status (24.1 per 100,000 among MSM, and 12.2 among all attendees, see Figure 25) (1). MSM showed elevated rates of HCV diagnoses, which could be driven by a greater prevalence of high-risk behaviours including higher numbers of condomless anal intercourse partners or, for some MSM, injecting certain recreational drugs prior to or during sex (‘slamming’). The higher diagnosis rates of HCV in MSM may also be attributed to more intensive hepatitis testing at SHSs among this group compared to heterosexuals. Since 2016, rates of HCV diagnoses have fallen in all individuals attending SHSs, with the greatest falls seen in those who have diagnosed HIV infection (Figure 25). This may be a reflection of the rollout of highly effective HCV DAA drugs in combination with other harm reduction initiatives.

HARS data is important for monitoring rates of HCV co-infection in this important group who are at increased risk of HCV infection (89). In 2020, of the people living with diagnosed HIV and accessing care in England, 0.9% (804 out of 87,006) tested positive for either an acute or chronic HCV infection (1.0% (823 out of 86,067) in 2019), and HCV co-infection varied by exposure group (Figure 26). In 2020, the proportion co-infected was highest in people living with HIV who reported exposure through injecting drug use alone (17.8% in 2020) and in combination with acquiring HIV through sex between men (3.5%). HCV co-infection was least common among people with diagnosed HIV who were heterosexual men (0.6%) or women (0.3%).
Figure 25. Rates of HCV diagnoses* by HIV status in Sexual Health Services per 100,000 attendees, shown for all attendees (including MSM) and MSM alone, England residents***, 2015 to 2020†

Data Source: GUMCAD STI Surveillance system (88).
* Only the first known HCV diagnosis per patient is retained when reporting diagnoses trends using GUMCAD data. HCV test results reported to GUMCAD are defined based on anti-HCV or HCV RNA results and therefore cannot distinguish between current and past infections.
** Rates of diagnoses are calculated using the number of SHS clinic attendees per year as the denominator and not the number tested as the previous test codes reported to GUMCAD for the data included in this report could not be used to distinguish between testing for hepatitis A, B or C.
*** Data included England residents only.
† The data reported in 2020 is impacted by the reconfiguration of sexual health services during the national response to COVID-19.
Figure 26. Proportion of people accessing HIV care who have HCV by demographic group,* England, 2020†,††

Data Source: HARS (90).

* Demographic group refers to probable route of HIV acquisition which may not reflect how a person identifies sexually. The total number includes people with unknown or other routes of exposure.

** Proportion co-infected is calculated of all individuals attending for HIV care, including those not tested or where their testing status is unknown.

† A follow-up exercise was conducted in 2020 and 2021 to confirm the HIV and HCV coinfection status; 104 out of 158 centres responded and this resulted in approximately 1,000 patients being reassigned to not being HCV coinfected in 2020.

†† The data reported in 2020 is impacted by the reconfiguration of sexual health services during the national response to COVID-19.

Note: Gay, bisexual or other men who have sex with men (GBM).
HCV testing in the blood donor (lower risk) population

Blood donors are a cohort selected to have a lower risk of BBV infection. Monitoring infections is important as observations in this group can signal issues in the wider population. NHSBT currently collects blood donations from donors in England; all donations are screened for anti-HCV and RNA using nucleic acid testing (NAT) while repeat reactive donations/donors undergo confirmatory testing (Figure 27) (91). The residual risk for 2017 to 2019 of screening tests failing to detect an infectious HCV donation are estimated at less than one in one million (1), which would mean that it could be up to 76 years before an HCV infectious donation goes undetected (92).

Data on HCV testing in the blood donor population is available from the NHSBT UKHSA Epidemiology Unit (see Appendix 2).

Overall, in England, rates of HCV infection in blood donors remain low at around 23.8 per 100,000 donations in 2020, with 25 confirmed cases positive that year. Risk factors for infection included non-disclosed injecting drug use, donors also reported possible blood contact via a range of not necessarily causal exposures, for example, tattoos and piercings (see Appendix 3 section 23). Twenty-three were new donors, all identified by HCV antibody screening; 65.2% (15 out of 23) were also positive for HCV RNA (annual range for period 1999 to 2020: 62.3% to 89.3%; average 76.3%). Two were repeat donors aged 17 to 25 years, one identified by HCV antibody screening and also by NAT and one identified by HCV NAT screening only indicating they had acquired HCV very recently. Donations picked up via NAT screening alone are rare in England, with the previous one having been detected in 2013. In 2020, 17 of the 25 donors who tested positive for HCV in England were male, and 22 were aged 35 years and over.

Rates of confirmed anti-HCV positivity in donations from new donors have declined overall since 1991 to their lowest point in 2018 of 12.4 per 100,000 donations, although rates have subsequently increased to 23.8 per 100,000 donations in 2020 (Figure 27) (29, 93). The overall fall in rates in new donors is likely to be the result of the declining contribution of older HCV positive donors of White-British ethnicity, often with a past history of injecting, leaving a higher proportion of HCV positive donors with possible blood contact and/or endemic country as the potential source of infection (93). Rates in repeat donors are much lower, usually close to, or zero in recent years.

Rates of infection were similar (20.2 per 100,000 donations or samples) in convalescent plasma, collected by NHS BT from April 2020 from donors who had recovered from COVID-19, for use in treatment trials in patients admitted to hospital with COVID-19 (94). The majority of these donors were male and just over half were new donors. Of 44, 535 donations and samples, 9 new donors were confirmed anti-HCV positive, 5 also with HCV RNA, 8 were male donors and 5 were of South Asian ethnicity.
Further data on donors with HCV is also available from the NHSBT and UKHSA Epidemiology Unit Annual Review.
Figure 27. Rate of HCV among donations from new and repeat blood donors in England: September 1991 to 2020*

Data source: NHSBT UKHSA Epidemiology Unit.
* 1991 to 1995 includes Wales, 1996 to 2016 includes North Wales.
Monitoring access to HCV treatment (WHO programme target)

Achieving cure (SVR 12) following DAA treatment for HCV is associated with a near-90% reduction in liver-related mortality, an 80% reduction in the incidence of HCC, and a 75% reduction in all-cause mortality (95, 96, 97).

<table>
<thead>
<tr>
<th>Service coverage or programme target area</th>
<th>WHO EURO 2020 targets (6)</th>
<th>WHO 2030 target (3)</th>
<th>WHO interim guidance elimination validation target (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment coverage of people diagnosed with chronic HCV</td>
<td>[90% of diagnosed patients with chronic HCV are linked to care and adequately monitored] 75% (over 90% cured)</td>
<td>Greater than or equal to 80%</td>
<td>Greater than or equal to 80%</td>
</tr>
</tbody>
</table>

**Progress in England**

| Treatment coverage of people diagnosed with chronic HCV (2015 to 2020) | [73.5%* of diagnosed patients with chronic HCV are linked to specialist HCV treatment services] 65.3%** of those with diagnosed chronic HCV initiating treatment (78.6% SVR of those with treatment outcome reported)** | 65.3%** |

* 55.2% of individuals who tested positive for HCV RNA in sentinel surveillance were successfully linked to the national treatment registry database, a figure that rose to 73.5% when those with no NHS number or name and date of birth in SSBBV testing for linkage were excluded.

** Numerator: Number starting treatment; Denominator: Number of individuals who tested positive for HCV RNA in sentinel surveillance with NHS number or name and date of birth in SSBBV testing for linkage.

*** Numerator: Number achieving SVR. Denominator: Number with a treatment outcome reported.

Data on HCV treatment is available from:

- the NHS England Registry
- NHS England Commissioning from the Bluteq high cost drug management system
- the UAM Survey
- the H&J SRU (see Appendix 2)
Overall, data shows that between 2015 and 2020, around 3 in 4 (73.5%) patients with diagnosed chronic HCV were linked to specialist HCV treatment services. A slightly lower proportion (65.3%; 2020 WHO target is 75% (6)) of all patients with diagnosed chronic infection started HCV treatment (88.8% of those who were linked to specialist HCV treatment services). Just less than half of all people diagnosed with chronic HCV infection (45.8%) were known to have achieved SVR (78.6% of those who started treatment with an outcome recorded; 2020 WHO target is 90% (6)). This 6 year period allows for the impact of case finding and linkage to care initiatives in the HCV treatment programme to be reflected in the care cascade for HCV.

Among those who started treatment with an outcome reported, nearly 80% achieved SVR with just over 15% being lost to follow-up. SVR rates among those who were not lost to follow-up were high at 95.1%. Data shows that increasing numbers of people with HCV are accessing treatment, including vulnerable groups like PWID, those in prison or other places of detention, and those of South Asian origin, and NHS England elimination initiatives are a likely contributor to this (see Appendix 3 section 24).

An increasing proportion of referrals are coming from outreach services (around one in 5 from drug services and around one in 10 from prisons between tax year 2012 to 2013 and tax year 2019 to 2020) and increasing numbers are being treated outside traditional secondary care settings, within the community (around one in 7 treated in drug services and around one in 10 in prisons between tax year 2012 to 2013 and tax year 2019 to 2020). In drug services, an increasing proportion report being offered and accepting HCV treatment (around 3 in 4 in 2020) and around half of those testing HCV RNA positive in prisons or other places of detention in tax year 2020 to 2021, are recorded as having received referrals for specialist HCV treatment. Substantial progress has been made to increase the numbers accessing HCV treatment, but more needs to be done to reach the 2030 WHO target of at least 80% of those diagnosed and eligible for treatment, accessing treatment. To help with this, a world-first hepatitis C treatment pathway for children, enabling hundreds of children and young people in England to be the first in the world to receive expert advice and treatment, wherever they live in England, was launched on 1 April 2021. Data from the 3 national paediatric liver units in England indicates that around 100 children will initially be prioritised for treatment by this pathway.

**Numbers initiating HCV treatment**

NHS England commissioning data shows significant increases in the number of people accessing HCV treatment since 2014 as access to new DAA drugs increased in England (42 to 50) (Figure 28) (1). By tax year 2019 to 2020, the annual number treated (n=12,229) was up 140.0% on the mean level reported in earlier years (5,096, 2008 to 2014), and up 4.0% on the previous year. In tax year 2020 to 2021, treatment initiations fell by 35.9% to 7,835, likely due to COVID-19 pandemic restrictions (24) (Figure 28) (1). Overall, between tax years 2015 to 2016 and 2020 to 2021, NHS England commissioning data shows that 58,848 treatment initiations took place.
Data is also available from the NHS England Registry that was commissioned by NHS England in 2017 from the Arden and Greater East Midlands Commissioning Support Unit to capture more detailed information for patients (98). This registry data (palest blue and dark teal bars, Figure 28) suggests that around 56,000 treatment initiations (n= 55,845) took place between tax years 2015 to 2016 and 2020 to 2021, approximately 3,000 less than estimated via commissioning data (n=3,003) and around 4,500 less (n=4,498) when subsequent treatments for the same patient are excluded (1). When compared to the commissioning data, overall numbers may be lower in the NHS England Registry, if data entry is incomplete.

Amongst those in whom it was possible to determine the outcome of their first treatment (n= 39,333), 95.0% achieved a SVR 12 weeks after completion of treatment (0.4% breakthrough, 3.4% relapse and 1.2% non-response). A variety of DAA drugs were used, with 32.9% receiving them in combination with ribavirin.

**Antiviral drug resistance**

The emergence or presence of transmitted antiviral drug resistance can be a factor in DAA treatment failure. Testing for HCV drug resistance is not universally recommended prior to initiating DAA therapy, as there is no or minimal impact of resistance on cure rates in DAA-naïve individuals in many scenarios. However, in some circumstances, such as prior to starting the regimen elbasvir-grazoprevir in HCV subtype 1a infection, pre-treatment resistance testing of the NS5A gene may be performed to inform the treatment plan. In addition, where first-line DAA therapy is unsuccessful, re-treatment regimens are available in many circumstances, which lead to high cure rates, without the need for pre-retreatment resistance testing. Alternatively, sequencing of the NS3, NS5A and NS5B genes may be performed to inform the choice of second-line therapy.

The Antiviral Unit at UKHSA offers an HCV whole genome sequencing service to the NHS that provides the genotype and antiviral resistance profile in a single test at patient entry into care. Most currently available HCV resistance data within the Antiviral Unit is for the NS5A gene of subtype 1a only and the Unit has received an average of 727 samples per year since 2016.

Amongst DAA-naïve individuals with subtype 1a infection, NS5A resistance prevalence was 11.1% (3 out of 27) in 2016, 34.2% (51 out of 149) in 2018 and 17.2% (5 out of 29) in 2021, suggesting an increase in transmitted resistance, although the driver is currently unclear. One potential explanation is that resistance has been selected by expansion of the elbasvir-grazoprevir DAA regimen since 2016, although this remains to be determined. For DAA-experienced individuals over the same period, the prevalence of NS5A resistance in HCV subtype 1a remained high, ranging from 27.0% (33 out of 122) in 2017 to 58.3% (21 out of 36) in 2021, indicating the high likelihood of emergent NS5A resistance in this population.
Figure 28. Provisional estimates of numbers initiating HCV treatment in England, 2007 to tax year 2020 to 2021

- Estimates of numbers initiating HCV treatment in England
- First treatment initiations recorded in the NHS England hepatitis C patient registry and treatment outcome system as at 23 June 2021*
- Subsequent treatment initiations recorded in the NHS England hepatitis C patient registry and treatment outcome system as at 23 June 2021*

Data Source: (i) NHS England for data from the hepatitis C patient registry and treatment outcome system as of 23 June 2021 and for DAA drug commissioning data for tax years 2015 to 2016 and 2020 to 2021 (commissioning data is based on clinician intention to treat and invoicing and is subject to data quality issues and contract adjustments); (ii) Sentinel surveillance of hepatitis bloodborne virus testing for scaled estimates for the period 2012 to 2014; (iii) Estimates from Roche sales, IMS supply chain manager, and Pharmex data for 2007 to 2011 (28).

* Treatment initiations include first treatments episodes (n=54,350) and subsequent treatment episodes (n=1,495). For treatment episodes with missing start dates (n=818), their distribution across the years was assumed to mirror that of those patients with treatment start dates and they were allocated to treatment years accordingly. Within the register there were 334 records where individuals with a first treatment recorded restarted this treatment (10 in tax year 2015 to 2016; one in 2016 to 2017; 60 in 2017 to 2018; 72 in 2018 to 2019; 89 in 2019 to 2020 and 62 in 2020 to 2021) and there were 308 records where it was not possible to determine whether the record was a treatment restart, the same or a subsequent treatment (one in tax year 2015 to 2016; 6 in tax year 2016 to 2017; 8 in tax year 2017 to 2018; 24 in tax year 2018 to 2019; 49 in tax year 2019 to 2020 and 220 in tax year 2020 to 2021).
Treatment pathway for individuals with a positive RNA or antigen test in SSBBV testing

For HCV, treatment coverage is defined as the proportion of persons diagnosed with chronic HCV infection (that is, HCV RNA or HCV core antigen (HCVcAg) positive) and started on treatment during a specified time frame (for example, 12 months) over the number of persons diagnosed with chronic HCV infection (defined as positive for HCV RNA or positive for HCVcAg) for the specified time period (for example, 12 months) (2).

While work is ongoing to quantify the national treated proportion, data from sentinel laboratories has been linked to the NHS England Registry to follow individuals through the care pathway, from testing to treatment initiation and outcome. For the period 2015 to 2020, 82,173 individuals tested positive for HCV RNA in sentinel surveillance, of these 55.2% were successfully linked to the national treatment registry database, a figure that rose to 73.5% when those with no NHS number or name and date of birth in SSBBV testing were excluded (Figure 29). Of those linked to the registry, 88.8% commenced treatment for their HCV infection. A treatment outcome was available for 89.4% of those who commenced treatment, of whom 78.6% were reported to have achieved SVR-12 (Figure 29). Although the majority of those who started treatment were known to have successfully cleared the virus, 16.3% of patients were lost to follow up, 4.0% were reported as either having breakthrough (HCV RNA negative during treatment but became HCV RNA positive again during treatment), relapse, non-response to treatment or other outcomes, and 1.1% had died after initiation of treatment, before SVR could be established. When those who were lost to follow-up or who had died were excluded, 95.1% achieved a SVR.

Late diagnosis of HCV infection

The best outcomes are obtained by those with early diagnoses and prompt access to HCV treatment as the virus can be cleared before causing serious liver damage (99). Although data on disease stage at first diagnosis of HCV is not available from the NHS England Registry, it is possible to calculate the time since first diagnosis for those identified as being at a late stage of disease (defined as the presence of cirrhosis) when commencing their first HCV treatment recorded in the NHS England Registry.

When looking at the first treatment recorded in the NHS England Registry (as at 23 June 2021) for those people with complete data on disease stage (97.7%; 54,151 out of 55,447), 23.1% (12,531 out of 54,151) of patients had cirrhosis recorded at treatment initiation. This proportion was lower than previously reported (26.1%) following analysis of data downloaded in October 2019 (8). Data was available in the NHS England Registry for 76.0% of these patients (9,525 out of 12,531) to determine the interval between year of first diagnosis and year of treatment. (Figure 30). Of these patients with cirrhosis (100) just under half (47.7%) received their first HCV diagnosis within the previous 2 years. When reviewing those with late stage liver disease as defined by Mauss and others (101) (cirrhosis with past or current
decompensation and/or HCC), 6.3% of patients had late stage liver disease at their first treatment recorded in the NHS England Registry. Data to determine the interval between year of first diagnosis and year of treatment was available for 82.7% of these patients (Figure 30). Of these patients with late stage disease at first treatment (n=2,970), 44.0% received their first HCV diagnosis within the previous 2 years.

Proportion of PWID reporting ever having seen a specialist nurse or doctor about their HCV, reporting being offered and accepting HCV treatment

Data from the 2020 UAM Survey (4) suggests that the majority of those who were aware of their infection had seen a specialist nurse or doctor about their HCV (84.6%; 110 out of 130) and 3 in 4 of these people (75.2%; 79 out of 105) report that they had been offered and accepted treatment. A small proportion reported being offered treatment but declined (6.7%; 7 out of 105); 5.7% (6 out of 105) reported that treatment was not offered; and 2.4% (13 out of 105) reported being offered treatment but were waiting to start at the time of survey completion.

The proportion reporting being offered and accepting treatment increased significantly from 36.1% (91 out of 252) in 2011 to 48.9% (234 out of 479) in 2019 (p<0.01), with a further significant increase of 26.3% in 2020 (p<0.01). However, the extent of the increase in 2020 should be interpreted with caution given the change in survey question, the difference in geographical distribution of the samples collected in 2020, the change in risk profile of participants and the smaller sample size. 2020 data is provisional.

Proportion of those testing HCV RNA positive in secure and detained settings who receive specialist referrals

Data from the H&J SRU for the whole prison population (excluding those previously positive at the reception screen and without a code indicating resolved HCV infection), shows that 47.6% of those testing HCV RNA positive in tax year 2020 to 2021 received a specialist referral.
Figure 29. Treatment pathway for individuals with a positive RNA or antigen test in SSBBV testing between 2015 and 2020*

Data source: Sentinel Surveillance of Bloodborne Virus Testing (32) and NHS England data from the Hepatitis C Patient Registry and Treatment Outcome System as of 19 October 2021.

* RNA and antigen tests were linked to the NHS England’s Hepatitis C Patient Registry and Treatment Outcome System using NHS Number, Name, DOB, hospital number and excludes children aged under one. Patient identifiable data submitted by sentinel laboratories is variable, particularly from sexual health and drug and alcohol services, which limits the ability to link data sets or de-duplicate. Data is de-duplicated subject to availability of date of birth, Soundex, NHS number and first initial. All data is provisional.

** 55.2% of individuals who tested positive for HCV RNA in sentinel surveillance were successfully linked to the national treatment registry database, a figure that rose to 73.5% when those with no NHS number or name and date of birth in SSBBV testing for linkage were excluded.
Figure 30. Time from first diagnosis to treatment* among patients with late stage liver disease at their first recorded treatment initiation in the NHS England Hepatitis C Patient Registry and Treatment Outcome System

Data Source: NHS England Hepatitis C Patient Registry and Treatment Outcome System, as of 23 June 2021.

* The diagnosis to treatment interval is the number of years between the year of first diagnosis and year of first recorded treatment in the Hepatitis C Patient Registry and Treatment Outcome System, displayed as the proportion of people with cirrhosis within each diagnosis to treatment interval.

** Late stage disease as defined by Maus and others (101).
Access to treatment by vulnerable groups at increased risk of HCV infection

Many HCV infections occur in marginalised populations, including PWID and people from minority ethnic populations like those from South Asia. It is therefore important to monitor whether existing care pathways facilitate these individuals, as well as others, to access treatment and care. Analyses of data allows assessment of whether treatment is reaching these groups at increased risk of infection and the extent to which treatment is being delivered outside traditional secondary and tertiary care settings and via outreach services (see Appendix 3 section 25).

Data on HCV treatment in these populations is available from the NHS England Registry (see Appendix 2).

Proportion of people originating from, or born in, South Asia and Eastern Europe accessing treatment services

Data from the NHS England Registry as at 23 June 2021 shows that of the 55,447 patients who had a first treatment recorded in the database (Figure 31), 83.8% were of White ethnicity, with 8.1% Asian/Asian British and 3.5% classified as Black/African/Caribbean/Black British. Twenty-four percent were born outside the UK, with 6.0% of patients born in a South Asian country and 9.5% born in Eastern Europe. Given that the general population is constituted from 85.4% White ethnic groups, 5.5% South Asian, and 3.5% Black ethnic groups, and that 3.7% are born in European union (EU) countries excluding Ireland with 9.4% born in any other non-UK/EU country (102), the data suggests that people originating from, or born in, South Asia and Eastern Europe are accessing treatment services.
Figure 31. Distribution of patient treatment episodes, and patients yet to be treated, in the HCV Patient Registry and Treatment Outcome System, by ODN

Data Source: NHS England data from the Hepatitis C Patient Registry and Treatment Outcome System, from tax year 2012 to 2013 up to tax year 2019 to 2020. These figures are based on data as at 23 June 2021.
Proportion of treatment episodes in those reporting current or recent drug injection accessing treatment services

Data shows that an increasing proportion of people who currently/recently injected drugs, and so at risk of transmitting the virus, are accessing HCV treatment. Data for injecting status was provided for 78.1% of the 55,447 patients who received treatment, and showed that 34.3% of patients had currently/recently injected drugs (injected in the last 3 years; an increase on the 27.0% reported by October 2019 (8)), 29.6% reported never injecting drugs, while most patients (36.1%) had a history of injecting drugs but were no longer injecting (see Appendix 3 Section 25, Figure 37).

Proportion of referrals from drug services, prisons and outreach settings accessing treatment services

Data shows that an increasing proportion of people are being referred for HCV treatment from drug services and prisons. Most of the 55,447 patients were referred via primary care (34.5%), with 22.8% coming from General Medicine, Gastroenterology, or Infectious Diseases; increasing numbers were referred from drug services (20.3%, an increase on the 16.4% reported by October 2019 (8)) and prisons (10.8%, an increase on the 8.8% reported by October 2019 (8)) and 3.4% came via sexual health services (see Appendix 3 section 25, Figure 38). Referrals from other sources were relatively rare, making up less than 10% of the overall total.

Proportion of people with no or mild disease stage accessing treatment services

As people with no, or mild, disease stage are more likely to have acquired their infections recently, this group are likely to be at increased risk of transmitting HCV infection to others. Data shows that an increasing proportion of people are being referred for HCV treatment at an early stage of HCV infection when they are more likely to be transmitting the virus. Treatment of these individuals will not only help to reduce onward transmission of the virus, but will facilitate viral clearance at an early stage before significant liver damage has occurred. Among the 55,447 patients, disease stage was well reported (97.7% complete) and 66.1% of all patients treated with disease stage recorded (an increase on the 63.8% reported by October 2019 (8)) had either no evidence of fibrosis prior to treatment (43.2%) or had only mild fibrosis (24.5%) (see Appendix 3 section 25, Figure 39). A further 23.1% of patients had either biopsy proven or a non-invasive estimate of cirrhosis prior to treatment, some of which was decompensated (10.1% of those with cirrhosis) or had past decompensation (3.9% of those with cirrhosis).

Proportion of people receiving HCV treatment outside traditional secondary and tertiary care settings, via prison and drug services

Data shows that an increasing proportion of ODNs are delivering HCV treatment to people outside traditional secondary and tertiary care settings, including outreach settings, prisons and
community drug services. Among the 55,447 patients, the majority (71.7%) were treated in secondary care, with the remainder receiving treatment in either drug services (14.4%, an increase on the 10.7% reported by October 2019 (8)), prisons (10.5%, an increase on the 8.3% reported by October 2019 (8)) or elsewhere (3.3%) (see Appendix 3 section 25 and Figure 40).

Impact of HCV treatment levels on HCV-related end stage liver disease

NHS England figures show that around 53,000 people were treated for their HCV between tax years 2016 to 2017 and 2020 to 2021 (9,440 patients in tax year 2016 to 2017, 11,557 in 2017 to 2018, 11,756 in 2018 to 2019, 12,229 in 2019 to 2020 and 7,835 in 2020 to 2021).

Given the numbers treated so far and current trends, statistical modelling (9) predicts that during 2020 around 9,000 people would be living with HCV-related compensated cirrhosis in England and this would reduce to around 2,100 by 2030 (Figure 32), representing a fall of 44% by 2020 and 87% by 2030 compared with a 2015 baseline. Incidence of HCV-related HCC/ESLD is predicted to fall from 1084 in 2020 to 369 in 2030, representing a fall of 36% by 2020 and 78% by 2030 compared with a 2015 baseline. The focus of treatment on those with cirrhosis is predicted to bring about dramatic reductions in severe HCV-related liver disease in the long run, although there is uncertainty around the current number with compensated cirrhosis. In last year’s estimates, HES data on HCV-related HCC/ESLD was truncated at 2016, and the inclusion of more recent data has resulted in an upward shift in the estimated number with compensated cirrhosis. The reason behind this is that there have not yet been large falls in HCC/ESLD, despite treatment of those with compensated cirrhosis, implying the pool must be larger than previously estimated. It must be borne in mind however that these estimates are based on assumptions around disease progression, amongst other things (see Appendix 3 section 26) and the trend is more important than the absolute estimates.

Despite the uncertainties and potential limitations of modelling, a substantial reduction in severe HCV-related disease is likely; and it is inevitable that DAA drugs will have a dramatic impact in comparison to previous interferon-based therapy (103). When DAAs were first introduced individuals with more advanced disease were prioritised. Treatment has been recommended for all those with a chronic HCV infection since 2017 regardless of disease stage, and should reduce the risk of developing severe disease in the long term. It remains important to treat early to prevent cirrhosis.
Figure 32. Estimated prevalence of HCV-related compensated cirrhosis and first occurrences of HCV-related HCC/ESLD; estimates from modelling the HCV epidemic and disease burden, 2015 to 2030 (bars represent 95% CrI) (9)

Data Source: Projections based on updated modelling, described in Ross J, Harris and others. ‘Monitoring the HCV epidemic in England and evaluating intervention scale-up using routinely collected data.’ Journal of Viral Hepatitis 2019 (9). Model projections are dependent on current prevalence and estimated disease progression rates.
Appendix 1. WHO HCV elimination targets

WHO GHSS targets (3) for viral hepatitis, relevant to HCV in the UK context, with 2020 targets updated to reflect the action plan for the health sector response to viral hepatitis in the WHO European Region (6) and proposed interim targets from the WHO interim guidance for country validation of hepatitis elimination (2).

<table>
<thead>
<tr>
<th>Impact target area</th>
<th>WHO GHSS 2020 target relative to 2015 baseline (3)</th>
<th>WHO GHSS 2030 target relative to 2015 baseline (3)</th>
<th>WHO interim guidance elimination validation target: annual absolute HCV incidence rates (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incidence: New cases of chronic viral hepatitis C infection</td>
<td>30% reduction</td>
<td>80% reduction</td>
<td>Equal to or less than 5 per 100,000 persons (equal to or less than 2 per 100 for PWID)</td>
</tr>
<tr>
<td>[Proxy incidence measure: alternative WHO approach, but not adequate for validation of elimination]</td>
<td></td>
<td></td>
<td>[Reduction in HCV viraemia prevalence by 80% from 2015 baseline (in general population and PWID)]</td>
</tr>
<tr>
<td>Mortality: Viral hepatitis C deaths</td>
<td>10% reduction</td>
<td>65% reduction</td>
<td>Equal to or less than 2 per 100,000 persons</td>
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<td>Service coverage or programme target area</td>
<td>WHO EURO 2020 target (6)</td>
<td>WHO GHSS 2030 target (3)</td>
<td>WHO interim guidance elimination validation target (2)</td>
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<tr>
<td>Blood safety:* Proportion of donations screened in a quality-assured manner</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
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<tr>
<td>Percentage of injections administered with safety engineered devices in and out of health facilities**</td>
<td>50%</td>
<td>90%</td>
<td>0%</td>
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<td>---</td>
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<tr>
<td>Unsafe injections**</td>
<td></td>
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<tr>
<td>Proportion of people with chronic HCV diagnosed</td>
<td>50% [75% of estimated number of patients at late stage of viral hepatitis-related liver disease (cirrhosis or HCC) diagnosed]</td>
<td>Greater than or equal to 90%</td>
<td>Greater than or equal to 90%</td>
</tr>
<tr>
<td>Harm reduction: A comprehensive package of harm reduction services to all PWID (72) including:</td>
<td>• At least 200 sterile needles and syringes provided per person who injects drugs per year • At least 40% of opioid dependent PWID receive OST • 90% of PWID receiving targeted HCV information, education and communication</td>
<td>At least 300 sterile needles and syringes provided per person who injects drugs per year</td>
<td>At least 300 sterile needles and syringes provided per person who injects drugs per year</td>
</tr>
<tr>
<td>Treatment coverage of people diagnosed with chronic HCV</td>
<td>[90% of diagnosed patients with chronic HCV are linked to care and adequately monitored] 75% (more than 90% cured)</td>
<td>Greater than or equal to 80%</td>
<td>Greater than or equal to 80%</td>
</tr>
</tbody>
</table>

* In England, 2020 and 2030 targets are already met (104).
** In England, 2020 and 2030 targets are already met in the health care setting as the UK follows the EU Directive for the prevention of sharps injuries in the health care setting (105) by using safety engineered devices.
# Appendix 2. Indicators to monitor HCV elimination in England and data sources

Indicators are given as bullet points. [W] refers to a WHO indicator, [P] refers to a placeholder.* Some indicators are both WHO indicators and placeholders.

<table>
<thead>
<tr>
<th>Impact and service coverage or programmatic indicators</th>
<th>Data source</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prevalence of HCV Infection</strong></td>
<td></td>
</tr>
<tr>
<td>• estimated chronic prevalence of HCV infection in general population</td>
<td>Modelled estimate (23)</td>
</tr>
<tr>
<td>• prevalence of HCV infection among PWID</td>
<td>UAM Survey</td>
</tr>
<tr>
<td>• proportion of individuals where their last reported RNA or antigen test within that year was positive</td>
<td>SSBBV</td>
</tr>
<tr>
<td><strong>Monitoring WHO programme target for proportion diagnosed and aware of their HCV infection</strong></td>
<td></td>
</tr>
<tr>
<td>• proportion of people with chronic HCV infection who are diagnosed [W] [P]</td>
<td></td>
</tr>
<tr>
<td>• proportion of PWID testing positive for HCV aware of their chronic infection [W]</td>
<td>UAM Survey</td>
</tr>
<tr>
<td>• proportion of people who have ever injected drugs newly presenting to drug or alcohol treatment who report knowing their HCV antibody and HCV RNA status, and among those reporting that they know, the proportion reporting their HCV antibody/HCV RNA status as positive</td>
<td>NDTMS</td>
</tr>
<tr>
<td><strong>Reducing the number of (incident) primary HCV infection and reinfection</strong></td>
<td></td>
</tr>
<tr>
<td>• estimated annual HCV incidence rate per 100,000 persons [W] [P]</td>
<td></td>
</tr>
<tr>
<td>• estimated annual HCV incidence rate per 100 PWID [W] [P]</td>
<td></td>
</tr>
<tr>
<td>Impact and service coverage or programmatic indicators</td>
<td>Data source</td>
</tr>
<tr>
<td>------------------------------------------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>reducing incidence of HCV infection</td>
<td></td>
</tr>
<tr>
<td>• reduction in chronic HCV prevalence, from 2015 baseline, in the general population (proxy measure of incidence) [W]</td>
<td>Modelled estimate [W]</td>
</tr>
<tr>
<td>• reduction in chronic HCV prevalence, from 2015 baseline, in PWID (proxy measure of incidence) [W]</td>
<td>UAM Survey</td>
</tr>
<tr>
<td>• estimated incidence of HCV among PWID</td>
<td>UAM Survey</td>
</tr>
<tr>
<td>• prevalence of anti-HCV among recent initiates to injecting drug use (proxy measure of incidence)</td>
<td>UAM Survey</td>
</tr>
<tr>
<td>• prevalence of anti-HCV among young adults (proxy measure of incidence)</td>
<td>SGSS</td>
</tr>
<tr>
<td>• reinfection among those achieving SVR following treatment</td>
<td>SSBBV and NHS England Registry**</td>
</tr>
<tr>
<td>Monitoring WHO impact target for reducing HCV-related mortality</td>
<td>Reducing HCV-related morbidity and mortality</td>
</tr>
<tr>
<td>• annual HCV-related mortality rate per 100,000 population, and death registrations for HCV and HCV-related HCC/ESLD [W]</td>
<td>ONS</td>
</tr>
<tr>
<td>• incidence of HCV-related HCC/ESLD</td>
<td>HES</td>
</tr>
<tr>
<td>• registrations for liver transplant and transplants undertaken, where post-HCV cirrhosis is given as the indication for transplant</td>
<td>NHSBT</td>
</tr>
<tr>
<td>Monitoring WHO programme targets for prevention of infection by ensuring adequate harm reduction for PWID</td>
<td>Harm reduction in PWID/drug services</td>
</tr>
<tr>
<td>• proportion of opioid dependent PWID receiving OST*** [W] [P]</td>
<td>NDTMS; Modelled estimate [W] (27)</td>
</tr>
<tr>
<td>• number of people in drug treatment who currently, previously, or ever injected drugs</td>
<td>NDTMS</td>
</tr>
<tr>
<td>• number of sterile needles and syringes provided per person who injects drugs per year [W] [P]</td>
<td></td>
</tr>
<tr>
<td>• estimated adequacy of NSP coverage among PWID</td>
<td>UAM Survey</td>
</tr>
<tr>
<td>• provision of LDSS through drug services</td>
<td>UAM Survey</td>
</tr>
<tr>
<td>Impact and service coverage or programmatic indicators</td>
<td>Data source</td>
</tr>
<tr>
<td>------------------------------------------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>• sharing of injecting equipment and associated paraphernalia among PWID</td>
<td>UAM Survey</td>
</tr>
<tr>
<td>• proportion of PWID receiving targeted HCV information [W]</td>
<td>UAM Survey</td>
</tr>
</tbody>
</table>

**Monitoring trends in HCV diagnosis and testing in the general population and risk groups**

**In the primary care and the wider population**

<table>
<thead>
<tr>
<th>In the primary care and the wider population</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• laboratory reports of HCV in England (by age, sex, and sample type)</td>
<td>SGSS</td>
</tr>
<tr>
<td>• number of individuals HCV tested and proportion anti-HCV and HCV RNA positive in the general population</td>
<td>SSBBV</td>
</tr>
<tr>
<td>• time interval to HCV RNA testing after testing anti-HCV positive in the general population (proxy marker for reflex testing)</td>
<td>SSBBV</td>
</tr>
<tr>
<td>• number of individuals HCV tested and proportion anti-HCV positive in primary care</td>
<td>SSBBV</td>
</tr>
</tbody>
</table>

**In people who report ever injecting drugs attending drug services**

<table>
<thead>
<tr>
<th>In people who report ever injecting drugs attending drug services</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• number of PWID reporting having had an HCV test (ever, or in the last 2 years)</td>
<td>UAM Survey</td>
</tr>
<tr>
<td>• number of people recorded as having received an HCV test (all, and those newly presenting to drug services)</td>
<td>NDTMS</td>
</tr>
<tr>
<td>• records of offer and uptake of HCV testing (all, and those newly presenting to drug services)</td>
<td>NDTMS</td>
</tr>
</tbody>
</table>

**In all attendees of drug and alcohol services, whether they report injecting drugs or not**

<table>
<thead>
<tr>
<th>In all attendees of drug and alcohol services, whether they report injecting drugs or not</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• number of people recorded as having received an HCV test (all, and those newly presenting to services)</td>
<td>NDTMS</td>
</tr>
<tr>
<td>• records of offer and uptake of HCV testing (all, and those newly presenting to services)</td>
<td>NDTMS</td>
</tr>
<tr>
<td>• number of individuals tested for anti-HCV by year, and proportion positive, through drug services</td>
<td>SSBBV</td>
</tr>
</tbody>
</table>
## Impact and service coverage or programmatic indicators

<table>
<thead>
<tr>
<th>Among people in secure and detained settings</th>
<th>Data source</th>
</tr>
</thead>
<tbody>
<tr>
<td>• proportion of new receptions to prisons tested for HCV</td>
<td>H&amp;J SRU</td>
</tr>
<tr>
<td>• HCV testing cascade in secure and detained settings</td>
<td>H&amp;J SRU</td>
</tr>
<tr>
<td>• number of individuals tested for anti-HCV by year, and proportion positive, through prison services</td>
<td>SSBBV</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>In those who have experienced homelessness</th>
<th>Data source</th>
</tr>
</thead>
<tbody>
<tr>
<td>• HCV prevalence among PWID reporting homelessness in the last year</td>
<td>UAM Survey</td>
</tr>
<tr>
<td>• number and proportion of laboratory reports of HCV with an indicator for homelessness</td>
<td>SGSS</td>
</tr>
<tr>
<td>• estimated proportion of people sleeping rough with reported diagnosed HCV infection</td>
<td>SGSS and Department for Levelling Up, Housing and Communities, Communities and Local Government annual Rough Sleeping Snapshot (50)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>In South Asian and other minority ethnic populations</th>
<th>Data source</th>
</tr>
</thead>
<tbody>
<tr>
<td>• number of individuals tested for anti-HCV by year, and proportion positive, of South Asian origin</td>
<td>SSBBV</td>
</tr>
<tr>
<td>• number of individuals tested for anti-HCV by year, and proportion positive, of Eastern European origin</td>
<td>SSBBV</td>
</tr>
<tr>
<td>• rates of HCV infection among blood donors of South Asian ethnicity</td>
<td>NHSBT UKHSA Epidemiology Unit donor testing data</td>
</tr>
<tr>
<td>• rates of HCV infection among blood donors of White ethnicity who are not White British/Irish</td>
<td>NHSBT UKHSA Epidemiology Unit donor testing data</td>
</tr>
</tbody>
</table>

| In sexual health services | |
|--------------------------| |

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106
## Impact and service coverage or programmatic indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Data source</th>
</tr>
</thead>
<tbody>
<tr>
<td>number of individuals tested for anti-HCV by year, and proportion positive, through SHS</td>
<td>SSBBV</td>
</tr>
<tr>
<td>rates of HCV by diagnosed HIV status in specialist sexual health services per 100,000 attendees, among all attendees and in MSM</td>
<td>GUMCAD</td>
</tr>
<tr>
<td>proportion of those accessing HIV care who have HCV co-infection, by demographic or exposure group</td>
<td>HARS</td>
</tr>
</tbody>
</table>

### In the blood donor (low risk) population

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Data source</th>
</tr>
</thead>
<tbody>
<tr>
<td>rates of HCV infection in the blood donor population (new and repeat donors)</td>
<td>NHSBT UKHSA Epidemiology Unit donor testing data</td>
</tr>
<tr>
<td>risk factors for acquisition of infection in the blood donor population</td>
<td>NHSBT UKHSA Epidemiology Unit donor testing data</td>
</tr>
</tbody>
</table>

## Numbers treated and the care pathway

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Data source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment coverage of people diagnosed with chronic HCV who are eligible for treatment [W]</td>
<td>SSBBV linked to NHS England Registry**</td>
</tr>
<tr>
<td>numbers initiating HCV treatment</td>
<td>NHS England Registry**</td>
</tr>
<tr>
<td>treatment pathway for individuals with a positive RNA or antigen test in SSBBV testing</td>
<td>SSBBV and NHS England Registry**</td>
</tr>
<tr>
<td>proportion of patients with late stage disease at their first recorded treatment initiation who were first diagnosed with HCV less than 2 years previously</td>
<td>NHS England Registry**</td>
</tr>
</tbody>
</table>
### Impact and service coverage or programmatic indicators

- proportion PWID reporting that they had ever seen a specialist nurse or doctor about their HCV, who reported being offered and accepting HCV treatment
- proportion of those testing HCV RNA positive in prison and other detained settings who receive specialist referrals

<table>
<thead>
<tr>
<th>Impact and service coverage or programmatic indicators</th>
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</tr>
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<tr>
<td>proportion PWID reporting that they had ever seen a specialist nurse or doctor about their HCV, who reported being offered and accepting HCV treatment</td>
<td>UAM Survey</td>
</tr>
<tr>
<td>proportion of those testing HCV RNA positive in prison and other detained settings who receive specialist referrals</td>
<td>H&amp;J SRU</td>
</tr>
</tbody>
</table>

### Access to treatment by vulnerable groups at increased risk of HCV infection

- proportion of people originating from, or born in, South Asia and Eastern Europe accessing treatment services
- proportion of treatment episodes in those reporting current or recent drug injection accessing treatment services
- proportion of referrals from drug services, prisons and outreach settings accessing treatment services
- proportion of people with no/mild disease stage accessing treatment services (proxy marker for recent infections and hence those at increased risk of transmission)
- proportion of people receiving HCV treatment outside traditional secondary and tertiary care settings, via prison and drug services

<table>
<thead>
<tr>
<th>Access to treatment by vulnerable groups at increased risk of HCV infection</th>
<th>Data source</th>
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</thead>
<tbody>
<tr>
<td>proportion of people originating from, or born in, South Asia and Eastern Europe accessing treatment services</td>
<td>NHS England Registry**</td>
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<td>proportion of treatment episodes in those reporting current or recent drug injection accessing treatment services</td>
<td>NHS England Registry **</td>
</tr>
<tr>
<td>proportion of referrals from drug services, prisons and outreach settings accessing treatment services</td>
<td>NHS England Registry**</td>
</tr>
<tr>
<td>proportion of people with no/mild disease stage accessing treatment services (proxy marker for recent infections and hence those at increased risk of transmission)</td>
<td>NHS England Registry**</td>
</tr>
<tr>
<td>proportion of people receiving HCV treatment outside traditional secondary and tertiary care settings, via prison and drug services</td>
<td>NHS England Registry**</td>
</tr>
</tbody>
</table>

### Impact of HCV treatment levels on HCV-related end stage liver disease

- annual predictions of the number of people living with HCV-related compensated cirrhosis, and incidence of HCV-related HCC/ESLD, in 2020 and 2030 given current treatment levels

<table>
<thead>
<tr>
<th>Impact of HCV treatment levels on HCV-related end stage liver disease</th>
<th>Data source</th>
</tr>
</thead>
<tbody>
<tr>
<td>annual predictions of the number of people living with HCV-related compensated cirrhosis, and incidence of HCV-related HCC/ESLD, in 2020 and 2030 given current treatment levels</td>
<td>Modelled estimate</td>
</tr>
</tbody>
</table>

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* Placeholders are for indicators that are not currently available or in development.


*** Available up until tax year 2011 to 2021; analysis of injecting drug use prevalence is under development to provide updated, robust estimates of the number of PWID and the proportion on OST.
Appendix 3. Additional information and methodology

Section 1

The HCV burden model used to estimate chronic prevalence and future disease burden is described in detail online. (9). The following data sources to inform the model are used:

- incidence of HCV infection in PWID over time, estimated via a force of infection model using 20 years of cross-sectional UAM data
- rates of disease progression from the Trent cohort (annual, age-specific probabilities of progression through mild, moderate, cirrhosis and HCC/ESLD states)
- disease endpoint data (age-specific HCV-related ESLD and HCC from HES, 2011 onwards)
- rates of injecting cessation
- mortality (drug-related mortality for those currently injecting, plus background mortality)
- recent estimates of the size of the PWID population
- background rates of infection in never-injecting populations
- treatment data to model and predict the impact of treatment scale up and those clearing chronic infection through SVR

The model reconstructs the epidemic of injecting drug use and associated HCV infections that would be consistent with several key sources of surveillance data: the UAM, estimated numbers of PWID and the numbers of infected individuals who progress to HCV-related HCC/ESLD over time.

The advantage of a combined approach is that surveillance data alone provides information only on infections in those who are currently injecting. Data on disease progression and endpoints (using “back-calculation” methods) provides information on longer-term infections, but prevalence in those infected more recently (that is, currently injecting) is highly uncertain. Model outputs thus include the total number of chronic infections over time, and the current and future burden in terms of HCV-related cirrhosis, ESLD and HCC. The model also estimates underlying rates of incident chronic infection (new and reinfections); however, these estimates are not at a fine temporal granularity and ongoing work is being carried out to generate incidence estimates in PWID for monitoring purposes.

Previous outputs also included numbers diagnosed over time from laboratory data (those testing positive for the first time), in order to calculate the proportion of chronic infections that are diagnosed and undiagnosed. However, problems with identifiers in the data have been found, leading to over-counting of ‘new’ HCV diagnosis and over-estimation of the proportion
diagnosed. Further work is required in order to derive the true number of remaining individuals with chronic infection who are diagnosed.

Section 2

The UKHSA burden model currently estimates underlying rates of incident chronic infection (both primary and reinfections), however, these estimates are not currently at a sufficiently fine temporal granularity to produce annual incidence rates to assess progress against the recently proposed WHO interim incidence indicator (2). Work is ongoing to explore the generation of these.

Section 3

Since modelling suggests that changes in the prevalence of chronic HCV infection closely track changes in HCV incidence over time with scale up of treatment (where there have not been significant changes in the coverage of prevention interventions) (107) the WHO have proposed using this as an alternative measure. Here reductions of at least 80% in the prevalence of chronic infection in a representative sample of the adult population, and in PWID, have been proposed as proxy indicators for absolute incidence targets. However, it is important to note that any increase in the prevalence of high-risk practices or scale up of prevention interventions will also have an impact on HCV incidence and the correlation with chronic HCV prevalence. In these situations, the target of 80% reduction in chronic HCV prevalence would need to be adjusted.

Section 4

The UAM Survey has used HCV antibody avidity data in previous years as a possible proxy to calculate de novo infection and hence incidence. However, as retrospective RNA testing has been completed for 2011 to 2013 UAM samples and samples from 2016 onwards, HCV RNA in serum prior to seroconversion to anti-HCV antibody can be used to calculate the proportion RNA positive among anti-HCV negative individuals providing an estimate of incidence; incidence estimates for 2014 and 2015 are not available as RNA testing was conducted on anti-HCV positive samples only (see Figure 33) (1).
Figure 33. Estimated incidence of HCV among HIV negative* people injecting psychoactive drugs in England who reported injecting in the previous year, 2011 to 2020 (bars represent 95% CI)

Data source: Unlinked Anonymous Monitoring Survey of people who inject drugs in contact with specialist services (4).

* Incidence is calculated of those anti-HCV negative. Those with HIV are excluded because they can have sub-optimal antibody responses as a result of their HIV infection.
† incidence estimates for 2014 and 2015 are not available as RNA testing was conducted on anti-HCV positive samples only.
¶ Due to limitations in recruitment as a result of the COVID-19 pandemic, 2020 data is provisional.
Section 5

In the UAM Survey of PWID, only around 8% of participants recruited in England (2014 to 2019) are recent initiates. Therefore, the statistical power to detect changes in incidence is low. Data for serological markers of recent infection is even sparser. As such, markers of incidence from the UAM Survey of PWID are unlikely to be able to determine small reductions in incidence, although a statistically significant increase in prevalence among recent initiates was observed in 2018 (See Figure 34) (1).
Figure 34. Prevalence of anti-HCV among recent initiates to injecting* in England 2011 to 2019 (bars represent 95% CI)

Data source: Unlinked Anonymous Monitoring Survey of people who inject drugs in contact with specialist services (4).

* Recent initiates are defined as PWID who commenced injecting drugs within the previous 3 years.
Data source SGSS (36).
* Laboratory reports include positive test results for HCV antibody and/or HCV RNA; 2020 data is provisional and figures for previous years are subject to change as a result of late reporting and the associated de-duplication procedure. The nature of laboratory reporting and the associated de-duplication procedure is such that reinfections are not captured. In addition, patient identifiable data submitted by NHS laboratories is variable, particularly from sexual health and drug and alcohol services, which limits the ability to deduplicate. Results for children under one year of age are excluded to rule out the likelihood of simply detecting maternal antibody. Statutory notification by diagnostic laboratories was introduced in October 2010 (108). HCV DBS testing data from 2011 onwards has now been obtained and included from additional laboratories, resulting in an increase in the overall number of HCV reports.
Section 7

Reinfection can be estimated from linked surveillance data. Reinfection among those achieving SVR following treatment, and/or a follow up negative RNA test at least 6 months after treatment initiation (as a proxy for SVR when it was not recorded), was determined by 3 methods:

1. A recorded SVR with a positive HCV RNA test at least 7 months after starting treatment.
2. A negative HCV RNA test at least 6 months after starting treatment, followed by a positive HCV RNA test at least 30 days after the first negative test post treatment.
3. A subsequent treatment initiation date at least 7 months after the previous treatment initiation date following an SVR.

Method 1 identified 1,009 possible reinfections, method 2 identified 618 possible reinfections and method 3 identified 343 possible reinfections. After deduplication of patients across the 3 methods, 1,336 possible reinfections were recorded.

Section 8

Further work is being undertaken to refine the reinfection algorithm and it is important to note that sentinel surveillance covers approximately 40% (109\textsuperscript{1}) of the HCV testing in England so individuals who were tested for HCV in non-participating labs would not have been linked to treatment data. Similarly, levels of reinfection may vary between those with sufficient identifiers for linkage and those without, or individuals may become lost to follow-up testing or excluded if they did not meet the reinfection definition. As such, these preliminary estimates rely on sentinel surveillance being representative of the population at risk and may lead to a conservative estimate of the number with positive HCV RNA tests post-HCV treatment and hence the number of reinfections.

Section 9

Comparison of ICD10 codes used by UKHSA and WHO and European Centre for Disease Prevention and Control (ECDC) for monitoring annual HCV-related mortality rates and death registrations for HCV and HCV-related HCC/ESLD.

<table>
<thead>
<tr>
<th></th>
<th>UKHSA</th>
<th>WHO/ECDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>B171 - Acute hepatitis C</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>B182 – Chronic viral hepatitis C</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>C220 – HCC</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>R18 – ASCITES (ESLD)</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>I850 – Oesophageal varices with bleeding (ESLD)</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>
Section 10

In England, new cases of HCV-related HCC/ESLD are monitored using HES. This analysis enables the production of preliminary estimates of new cases (incidence) of HCV-related HCC/ESLD. However, it is important to recognise the limitations of these estimates; HCV may be unreported in HES, and patient episodes can only successfully be linked when identifiers exist in HES to allow this. New cases are identified by first linking all episodes of ESLD or HCC for an individual using their unique patient identifier and then linking these to hospital records with a diagnosis of HCV since 2004. Once these are linked, a case of HCV-related ESLD or HCC is classified as ‘new’ if no previous episodes of ESLD or HCC for that individual are found in at least the previous 5 years (less than 1% of HCC/ESLD episodes are estimated to have had a previous episode more than 5 years earlier).

The loss of identifiers in HES data for 2017 (described previously [110]) meant that it was not possible to distinguish repeat hospital episodes for the same person, and thus determine the number of incident or prevalent cases of HCV-related HCC/ESLD in 2017. This had a further effect on 2018, as although the issue was rectified, attendees may appear as incident cases in 2018 due to a failure to link to previous records in 2017, thus over-counting incident cases. To rectify this, NHS Digital facilitated a resubmission of around 54% of HES data for 2017, and the incident measure from this subset of corrected data was scaled up to produce national
estimates for 2017 to 2019 in the previous report (25). The scaling factor used was the historic proportion of HCV-related HCC/ESLD from resubmitting providers of the national total. However, exploration of more recent data suggests that this proportion may not be constant over time, which would lead to bias in estimates scaled up from the subset of resubmitted provider data. Further, it has been suggested that resubmitted data is not guaranteed to be complete for all providers. In this report, data for 2017 and 2018 is therefore omitted. By 2019, however, the residual impact of the loss of identifiers in 2017 is small. Misclassification of an incident case would require a first attendance in 2017, no attendance in 2018, then attendance in 2019. Analysis of pre-2017 HES data shows that the proportion of HCV-related HCC/ESLD cases with such an attendance pattern is less than 5%, and for a two-year gap (2020) less than 3%, indicating that observed incidence in 2019, and certainly 2020, are unlikely to over-count incidence by more than a small degree. This is also supported by further comparisons of corrected and uncorrected data sets for these years. It is unfortunate that there is now a gap in the time trend, which is likely to remain.

Section 11

The proportion of people with chronic HCV who are diagnosed can be calculated by dividing the number of people with diagnosed chronic HCV infection by the estimated size of the infected population. While modelled estimates for the number with chronic HCV infection are available for England (see Figure 1), it is difficult to define the numerator (number who have been diagnosed) because the incomplete deduplication that arises when identifiers are sub-optimal, leads to over-counting of ‘new’ infections and over-estimation of the proportion diagnosed. Work is ongoing to improve this.

An acceptable alternative method supported by the WHO to determine the proportion diagnosed, involves the use of surveys which ask people whether they are aware of their HCV infection status (2). Estimates of the proportions of PWID ever diagnosed and with chronic HCV infection can be obtained from the UAM Survey (4).

Section 12

The online HCV testing quiz was launched in 2019 on World Hepatitis Day (28 July) and data to 26 April 2021 was analysed. Since then, over 2,000 people had completed the quiz (n=2,031). During this period, 35.6% (n=723) of people taking the quiz identified at least 1 risk factor for HCV infection. The most commonly reported risk factor was ever engaging in unprotected sex with someone who has or might have had HCV, particularly if there were opportunities for blood-to-blood contact during sex (14.5%; n=294). Ever having had a tattoo, piercing, acupuncture, electrolysis or semi-permanent make-up using equipment that may have been unsterilized was the second most commonly reported risk (11.5%; n=234), with potential exposure via receipt of a blood product the third most common with 10.3% (n=210) reporting having received a blood transfusion before September 1991 or a blood product (such as clotting factor) before 1986 in the UK. Less frequently reported risk factors included sharing
a razor or toothbrush with a person who is HCV positive or status unknown (6.6% n= 135) and ever sharing a needle or other equipment for injecting drugs, despite this being the main route of transmission for HCV in England, with 6.4% (n=130) reporting ever sharing injecting equipment and 2.0% (n=41) reporting that they did not know whether they had ever shared injecting equipment. Ever receiving medical or dental treatment in unsterile conditions was the least commonly reported risk factor (4.7% n=96).

By the end of April 2021, 13,789 posters featuring TV’s Dr Christian Jessen had been issued to GP surgeries throughout England via the Health Publications website, product code: HEPCQUIZ001/HEPCQUIZ002.

Section 13

The Hepatitis C Trust provides a range of services including a South Asian Outreach Officer who leads awareness and testing events within the South Asian community at Melas, Mosques and other community centres, in partnership with community leaders and local health authorities, to help raise awareness of HCV and encourage testing within the South Asian community. In addition, The Hepatitis C Trust continues to develop their community peer programme and currently have a team of 31 staff dedicated to working with people affected by HCV. This programme includes peer-to-peer education; buddying services to support people through testing, treatment and care; as well as partnership working to support pathway coordination. The Trust continues to operate an outreach and testing van to visit the most at-risk populations in areas where testing is not yet easily accessible, offering clear information and advice from trained staff with on-the-spot rapid point of care antibody testing.

Section 14

The NHS England elimination programme is committed to supporting primary care colleagues to play an important role in driving forward HCV elimination. To that end, a bespoke tool (the Patient Search Identification Tool) has been developed as part of the programme to identify patients at risk of HCV in primary care settings. This tool searches primary care records for evidence of risk factors and investigations that indicate a high risk of HCV infection and flags such patients for future testing and, if indicated, treatment. The tool is available within all 3 of the main GP clinical systems and has been run in over 188 GP practices so far. Case studies are being developed to support uptake and usage. Increased usage and uptake of the Patient Search Identification Tool will boost targeted and opportunistic testing of high-risk groups, including those infected by historical NHS administered contaminated blood products.

In addition, a national programme of communications and workforce development activity, to enable primary care practitioners to support HCV elimination, is in place.
Section 15

A partnership with PPG, Gilead and The Hepatitis C Trust have made significant progress in delivering a HITT programme within all PPG prisons. When COVID-19 struck, prison HCV elimination initiatives were paused unless clinical need was identified, with prisons closed to external visitors, including The Hepatitis C Trust peers and hepatology specialist nurses. In response, health and justice teams made access changes in order to continue protecting the health of people in prison, whilst facilitating some treatment initiations where clinical need was identified. As of July 2021, some prisons have been able to successfully re-start delivery of HITTS with others planning to recommence.

As HCV is eliminated from the prison estate, opt-out testing of new receptions will be important in maintaining the elimination status of individual prisons. Looking to the future, data reporting and monitoring for BBV testing will be improved through use of the new Health and Justice Information System (HJIS), allowing scrutiny of individual prison performance on BBV testing offer, uptake and referral to treatment, visualisation of rolling data trends and assessment of inequalities in these indicators by age and ethnicity. Strategies are under development for the general recovery of Section 7a services in prisons and include a focus on BBV testing and treatment.

Section 16

Analysis of injecting drug use prevalence has moved within UKHSA and methodology is under development to provide updated, robust estimates of the number of PWID and the proportion on OST. Data processing is currently underway, and the analysis will build on previous work using random effects models to capture geographic variation, and make use of drug-related mortality data.

Section 17

In 2016, the UAM Survey questionnaire was reviewed, resulting in a number of changes to data items from 2017 onwards. Questions around NSP access were updated to reflect changes in NSP provision that have been observed nationally and to incorporate information on secondary distribution of injecting equipment occurring among this population. Prior to 2017, participants in the UAM Survey were asked how many needles they collected per month, and from 2017 onwards they were asked to report the frequency of NSP visits per month and the number of needles collected per visit for themselves and for others. As a result, the indicator from 2017 onwards is not directly comparable to previous years.
**Section 18**

**Figure 36. Age and sex distribution of laboratory reports* of HCV from England: 2010 to 2020**

Data source SGSS (36).

* Laboratory reports include positive test results for HCV antibody and/or HCV RNA; 2020 data is provisional and figures for previous years are subject to change as a result of late reporting and the associated de-duplication procedure. The nature of laboratory reporting and the associated de-duplication procedure is such that reinfections are not captured. In addition, patient identifiable data submitted by NHS laboratories is variable, particularly from sexual health and drug and alcohol services, which limits the ability to deduplicate. Results for children under one year of age are excluded to rule out the likelihood of simply detecting maternal antibody.

** HCV DBS testing data from 2011 onwards has now been obtained and included from additional laboratories, resulting in an increase in the overall number of HCV reports.
Section 19

Sentinel surveillance data is from 19 laboratories and are based on complete and consistent reporting for a 5 year period. This means that the numbers of laboratories included for trend data may change each year depending on their reporting history. Sentinel Surveillance covers approximately 45% of all testing in the GP registered population. As sentinel surveillance includes the 2 laboratories processing DBS tests for the major drug services in England, it is likely that sentinel surveillance covers most tests coming from drug services, where DBS is the main method of testing.

Section 20

A major focus of the NHS England elimination program has been to establish a culture of universal testing in addiction services with ready access to antiviral therapy. All of the many organisations who provide services to people addicted to drugs have now joined a national program committed to increased testing and easy access to therapy. This has been achieved by introducing regional service co-ordinators, a national testing dashboard managed by individuals within addiction services that has been funded by the pharmaceutical industry as part of the collaborative program. Novel point-of-care testing devices (both antibody and RNA testing technologies) have been deployed in high throughput areas to reduce the delay between blood taking and diagnosis.

These initiatives have used commercial expertise to effect a change in culture within addiction services and regular meetings with regional data managers and ODN leads ensures rapid identification and resolution of problem areas. Monthly meetings with the senior NHSE management team and the regional pharmaceutical funded leads allows performance management of regional testing and treatment targets.

Section 21

Homelessness can be identified in laboratory reports (SGSS data) through the allocation of a no fixed abode (NFA) code to an individual’s postal address at the time of first diagnosis. Although this can be used as an indicator of homelessness, it is important to note that NFA codes may be subject to underreporting or misclassification, as well as changes in reporting practice over time. Like laboratory reports, it is important to recognise that rough sleeping figures (106) are also subject to some uncertainty as they are based on the number of people sleeping rough on a single night, but should nevertheless give an indication of trends over time.
Section 22

Data from the NHSBT UKHSA Epidemiology Unit shows that, of the 25 donors testing positive for HCV, 19 were of White ethnicity, 7 of whom were born outside the UK in Europe and country of birth was not available for 5 donors of White ethnicity. As in previous years, new donors of South Asian and other (non-British) White ethnicity were disproportionately affected (41). Three HCV positive donors of South Asian origin were identified in 2020 (76.4 per 100,000 new South Asian donors, see Figure 22), and though rates show variation year on year, rates in new donations in 2020 were lower than that seen in 2010 (138.6 per 100,000 new South Asian donors). Among the new donors of other White (non-British) ethnicity during 2020, 6 were confirmed as anti-HCV positive, and although variation in rates can be seen in the intervening years (Figure 23), this is a decrease from 17 new donors in 2010.

Section 23

Data from the NHSBT UKHSA Epidemiology Unit reported that when investigating the probable exposure risk among new donors during 2020 who were confirmed anti-HCV positive, 5 of the 23 new donors had no assignable risk factor. People with a history of injecting use are permanently deferred from donating in the UK, although donors do not always disclose this behaviour. The number of anti-HCV positive donors reporting injecting drug use varies each year with 8 reported in 2020 (representing 44.4% of those who had known risk factors), and the highest level reported since 2012. Of those who reported injecting drug use, 5 were older donors of White-British ethnicity aged between 47 and 62 years whose injecting appeared to be transient past behaviour, 4 injected in their teens or early twenties with 2 treated for their infection and one injected just once later in life 7 years prior to donation.

Donors who report having been treated for HCV are usually asked to provide a sample, rather than a full donation, as HCV antibody is usually still present and donations cannot therefore be used. Two donors born in Eastern Europe in the 35 to 39 year age group also reported injecting, one in their late teens and the other injected vitamins and had been feeling unwell for about 3 years with frequent visits to their GP for lethargy, aching joints and bloating. The remaining donor was of White-Irish ethnicity in the 45 to 49 year age group who reported injecting opioids and sharing needles within 2 to 3 months of their donation. One donor in the 30 to 34 year age group had received a blood transfusion as an infant in Eastern Europe prior to HCV screening and had not been aware of the transfusion until donation screening identified HCV.

Possible blood contact covers a wide range of not necessarily causal exposures. Where known, possible blood contact accounted for 5 of 18 (27.8%) HCV cases in new donors aged 39 to 58 years: 2 were of White British ethnicity and included a donor with tattoos and piercings in the UK in the 1980s and one lived in shared accommodation where their razors may have been shared. A further 2 were born in Eastern Europe and one UK born donor of Black ethnicity, had a family history of liver problems. A further 4 were born in Asia without any
other reported exposure (3 from Pakistan and one from China) aged 41 to 51 years at time of donation and were previously unaware of their status.

The 2 repeat donors were both of White-British ethnicity under 25 years old. The donor with very recent HCV infection detected by NAT screening had given a negative donation about 2 and a half years prior, but reported having a partner who had injected and been treated for HCV about 6 years previously and lived in hostel accommodation where needles and syringes were lying about. The other donor had given a negative donation 4 months prior and reported self-injecting medication prescribed privately and a single sexual contact with an Asian partner.

Section 24

Allied to the increase in testing has been a large-scale program of out-reach clinics and every addiction service in the country now has easy access to specialist nurses allowing infected individuals to access antiviral therapy within an environment of their choice. Individual support packages are offered to infected individuals including incentives to engage with the testing and treatment teams. The widescale introduction of out-reach treatment services has been supplemented by ‘Hepatitis C Peers’ – individuals with lived experience of hepatitis C who engage with groups at risk of infection, advocate testing and treatment and provide support throughout the treatment care pathway. Published data shows that the introduction of peers has led to a 12% increase in treatment initiation in networks with peers compared to those in whom peers have not been deployed (111). The current pathways have been associated with a 50% reduction in HCV prevalence in addiction services but a small cohort of patients remain reluctant to engage with current services. To address this remaining group of individuals, new treatment services are being evaluated (in North Yorkshire and Humberside) where a model of direct antiviral therapy by members of the addiction assessment team will be assessed.

Section 25

A summary of the NHS England Registry June 2021 download is as follows:

Preliminary findings from analyses of data from the NHS England Registry, downloaded in April 2018 (98), December 2018 (41) and October 2019 (8) have previously been reported, alongside an overview of the Registry’s content and completeness (98). Following the addition of data downloaded from the Registry on 23 June 2021, updated information is now available and reported here. As records within the NHS England Registry are continually added, modified and updated, data will differ from that reported previously.

As at 23 June 2021, the HCV treatment register contained 79,019 patient records. After removing duplicate records and records that were not sufficiently clear to process, 64,286 patient records remained: for 8,839 patients with no treatment recorded and 55,447 patients with at least one treatment recorded (see Figure 31).
Focusing on the ‘first’ treatments for individuals with a treatment episode in the NHS England Registry (55,447 people in total, see Figure 31), where data was available, 71.7% of patients were male and patients’ average age was 47.4 (standard deviation (SD): 11.7) years. The mean date of HCV diagnosis was 2012, with 48.2% of infections first diagnosed in 2013 or earlier, and 38.2% first diagnosed after 2015. Most infections were genotype 1 (48.0%) with a further 38.3% genotype 3. Where route of transmission was known (70.3%), the majority acquired their infection via injecting drug use (77.5%) or via non-occupational contact with blood in a healthcare setting (8.3%), although other routes were reported. The distribution of referral sources amongst those accessing treatment, varied by ODN (Figure 38). Previous treatment was reported in 17.5% of patients; 13.5% reported previous treatment with interferon/pegylated interferon (with or without ribavirin), 2.0% reported pegylated interferon (with or without ribavirin) plus a protease inhibitor, and 3.6% reported previous treatment with an all-oral interferon-free regimen. In 17.6% of patients, alcohol was reported to be a contributor to the individual’s liver disease, 5.3% were reported to be co-infected with HIV and 1.1% were reported to have renal failure. The distribution of disease stage at treatment varied by ODN (Figure 39). Fibroscan results were recorded for only 78.5% of the sample, and 20.5% of these people had scores indicative of cirrhosis (100). Of the 55,447 patients, 1.0% were reported to be post-transplant and 3.4% diagnosed with HCC.
Figure 37. Distribution of injecting status (%) for patients with a treatment episode in the Hepatitis C Patient Registry and Treatment Outcome System, by ODN (n= 55,447)

Data Source: NHS England data from the Hepatitis C Patient Registry and Treatment Outcome System as of 23 June 2021.
Figure 38. Distribution of source of referral (%) for patients with a treatment episode in the Hepatitis C Patient Registry and Treatment Outcome System, by ODN (n= 55,447)

Data Source: NHS England data from the Hepatitis C Patient Registry and Treatment Outcome System as of 23 June 2021.

Proportion

Operational Delivery Networks

A&E
General medicine/Gastro/ID
GUM
Other
Pharmacy (Needle Exchange)
Self-Referral
Antenatal
GP
HCV Re-Engagement Exercise
Pharmacy
Prison/Detention centre
Not completed
Drug services
GP (Needle Exchange)
Health Outreach
Pharmacy (Methadone replacement service)
Psychiatry
Figure 39. Distribution of disease stage (%) for patients with a treatment episode in the Hepatitis C Patient Registry and Treatment Outcome System, by ODN (n=55,447)

Data Source: NHS England data from the Hepatitis C Patient Registry and Treatment Outcome System as of 23 June 2021.
Figure 40. Distribution of treatment setting (%) for patients with a treatment episode in the Hepatitis C Patient Registry and Treatment Outcome System, by ODN (n=55,447)

Data Source: NHS England data from the Hepatitis C Patient Registry and Treatment Outcome System as of 23 June 2021.
Section 26

Estimates on the impact of HCV treatment on HCV-related end stage liver disease are based on a number of modelling assumptions (9). Although rates of post-SVR disease progression to ESLD in those with cirrhosis are assumed to be low, long-term outcomes are not yet well-quantified (112). Achieving SVR may not necessarily prevent progression to ESLD (112). There is also evidence that achievement of an SVR after cirrhosis has developed reduces, but does not obviate, the risk of HCC (113, 114). Longer survival because rates of ESLD are reduced may increase the relative risk of development of HCC and the influence of non-alcoholic fatty liver disease, diabetes mellitus and alcohol abuse on residual HCC risk post SVR requires further data. It is also assumed that the proportion of individuals with HCV who are treated does not fall over time. To maintain this will require increasing efforts in case-finding and linkage to care as the numbers who are easier to treat fall, leaving those who are relatively harder to engage. If this cannot be achieved, the impact will be correspondingly less.
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