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Unlinked Anonymous Monitoring (UAM) Survey of HIV and viral hepatitis among PWID: 2019 report

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Key Points

1. An ageing cohort of people who inject drugs (PWID) is evident from the Unlinked Anonymous Monitoring (UAM) survey, with the mean age increasing from 34 years in 2008 to 40 years in 2018. This is consistent with an ageing cohort of PWID observed in other data sources nationally and internationally.
2. HIV prevalence in this population remained stable at 1.2% in 2018, with 97% of those HIV-positive aware of their status.
3. The prevalence of antibodies to the hepatitis B core antigen (anti-HBc), a marker of past or current infection, has decreased in recent years to 9.1% in 2018 (from 18% in 2008).
4. The proportion of UAM participants with antibodies to hepatitis C (i.e. ever infection) who have markers (RNA) of chronic infection has decreased from 58% in 2011 when it was first measured to 49% in 2018; this corresponds with the timing of the scale-up of direct acting antiviral treatment against HCV among PWID.
5. The level of hepatitis C infection among the recent initiates to injecting participating in this survey are not suggestive of a decline in hepatitis C transmission in recent years.
6. The proportion of UAM participants who reported having a hepatitis C test in the current or previous year has increased from 37% in 2008 to 47% in 2018.
7. In 2018, among those with treatment status available, 39% of those aware of being HCV antibody positive had seen a specialist nurse or doctor for their hepatitis C and been offered and accepted treatment; this is an increase from 20% in 2011 when it was first measured.
8. Hepatitis B vaccine uptake decreased in under 25 year olds to 48% in 2018 from 76% in 2011 when vaccine uptake was highest, and in those aged 25-34 years to 68% in 2018 from 79% in 2011.
9. Symptoms of an infection at an injection site were reported by 54% of UAM participants who had injected in the last year in 2018; this is an increase from 50% in 2017.
10. The level of needle and syringe (direct) sharing reported by UAM participants who had injected during the preceding four weeks was 18% in 2018; similar to levels seen in 2008 (19%) and an increase from 14% in 2012 when reported sharing levels were lowest.
11. Injection of crack further increased in 2018; 60% of those who had injected in the preceding four weeks reporting crack injection as compared to 51% in 2017 and 35% in 2008.
12. An increase was seen in the proportion who reported being homeless during the last year (34% in 2008 to 47% in 2018).
13. In 2018, 21% of those who had injected in the last year reported overdosing during that period; this is an increase from 16% in 2013 when it was first measured. Carrying naloxone was reported by 65%, which is an increase from 54% in 2017.

Introduction

The aim of the Unlinked Anonymous Monitoring (UAM) Survey of People Who Inject Drugs (PWID) is to monitor the prevalence and incidence of HIV, hepatitis B and hepatitis C infection, and associated injecting risk behaviour in people who inject psychoactive drugs, such as heroin, crack cocaine and amphetamines. This annual cross-sectional survey is co-ordinated by Public Health England (PHE), with support from Public Health Wales and The Public Health Agency Northern Ireland.

New data from the UAM Survey have been published on the PHE website in a set of data tables which cover the period 2008 to 2018 [1]. Data from 1990 to 2007 can be found in previous years' data tables [2]. In addition to data for England, Wales and Northern Ireland combined (the areas covered by this survey), the tables also include data for each country and the regions of England separately.

This report presents an overview of the trends between 2008 and 2018 for the prevalence of HIV, hepatitis B and hepatitis C, injecting risk behaviours, and uptake of harm reduction services. It also includes an overview of the trends of non-fatal overdoses and use of naloxone – results for which were previously reported in a stand-alone report [3]. Further data from this survey related to hepatitis C will be reported in the *Hepatitis C in the UK: 2019 report*, to be published in September 2019. The previous year's report can be found online [4].

Methods

The UAM survey recruits people who inject drugs through specialist agencies within England, Wales and Northern Ireland. These agencies provide a range of services to those who inject psychoactive drugs, from medical treatment to needle and syringe programmes and outreach work. People using these services who are either currently injecting drugs or who have done so previously are asked to take part in the survey by service staff. Those who agree to take part provide a biological specimen that is tested for infection with or exposure to HIV, hepatitis C and hepatitis B viruses. Behavioural and limited demographic information is collected through a brief anonymous subject-completed questionnaire linked to the specimen but unlinked from any client identifying information. This includes questions on the uptake of diagnostic testing for HIV and hepatitis C, hepatitis B vaccination and the sharing of injecting equipment; participants may opt out of answering any questions. The questions asked have varied over time. No personal identifiers are collected; the questionnaire and specimen testing is anonymous.

The biological sample collected in the survey was changed from an oral fluid sample to a dried blood spot (DBS) during 2009 and 2010. From 2011 onwards, only DBS samples have been collected. The

sensitivities of the tests on a DBS sample for antibodies to HIV, hepatitis C and hepatitis B core antigen (anti-HBc), and that on an oral fluid sample for antibodies to HIV, are all close to 100%. However, the sensitivity of the oral fluid sample test for antibodies to hepatitis C is about 92% and that for antibodies to the anti-HBc is about 75%. Prevalence figures and its associated data tables based on these samples have been adjusted to account for these differences.

Throughout this report, data from the associated data tables are discussed and the trend over time is assessed. Where data are compared between years for significant changes in trend; age, gender and region are controlled for within the statistical analyses. This is discussed further in Appendix 2: Statistical notes.

Demographics

In 2018, 2,826 samples were collected from 70 participating drug and alcohol services in England, Wales and Northern Ireland (Figure 1, Appendix 1), with a geographical distribution similar to previous survey years. In total, 72% (95%CI 70%-74%) of participants were male, which is slightly lower than the proportion male in 2008 (74%) (Data Table 1, statistical note a). The mean age of participants in the 2018 survey was 40 years (range 18-69 years). An ageing cohort of PWID is evident from the UAM survey over time with the mean age increasing from 34 years in 2008, and the proportion of individuals under 25 years of age decreasing from 13% (95%CI 12%-15%) in 2008 to 2.4% (95%CI 1.9%-3.1%) in 2018 (Data Table 1, statistical note a). This is consistent with an ageing cohort of PWID observed in other data sources nationally [5, 6], and internationally [7]. The proportion of UAM survey participants who had injected in the last year was 70% (95%CI 68%-71%), which is a decrease from 77% (95%CI 76%-79%) in 2008 (Data Table 1, statistical note a).

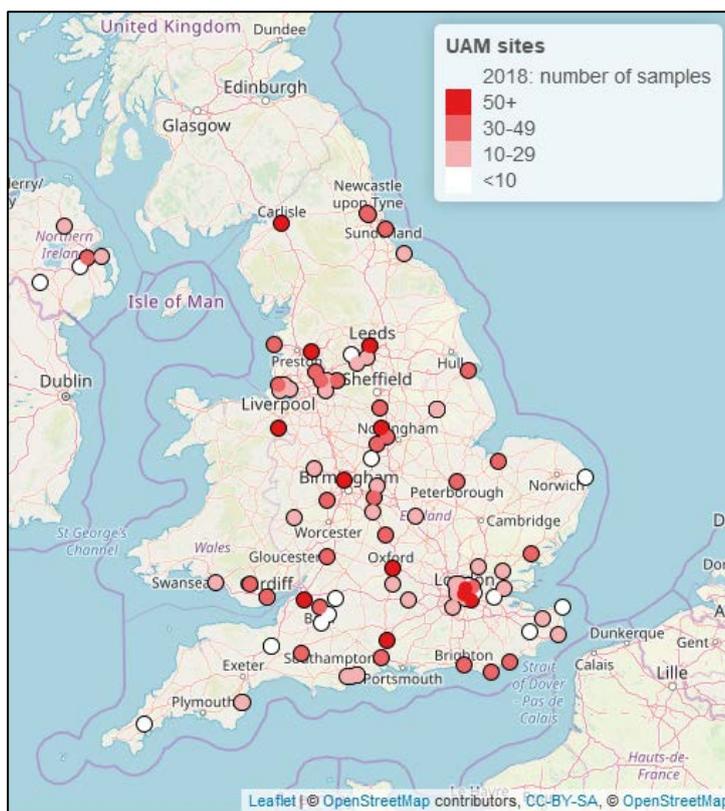
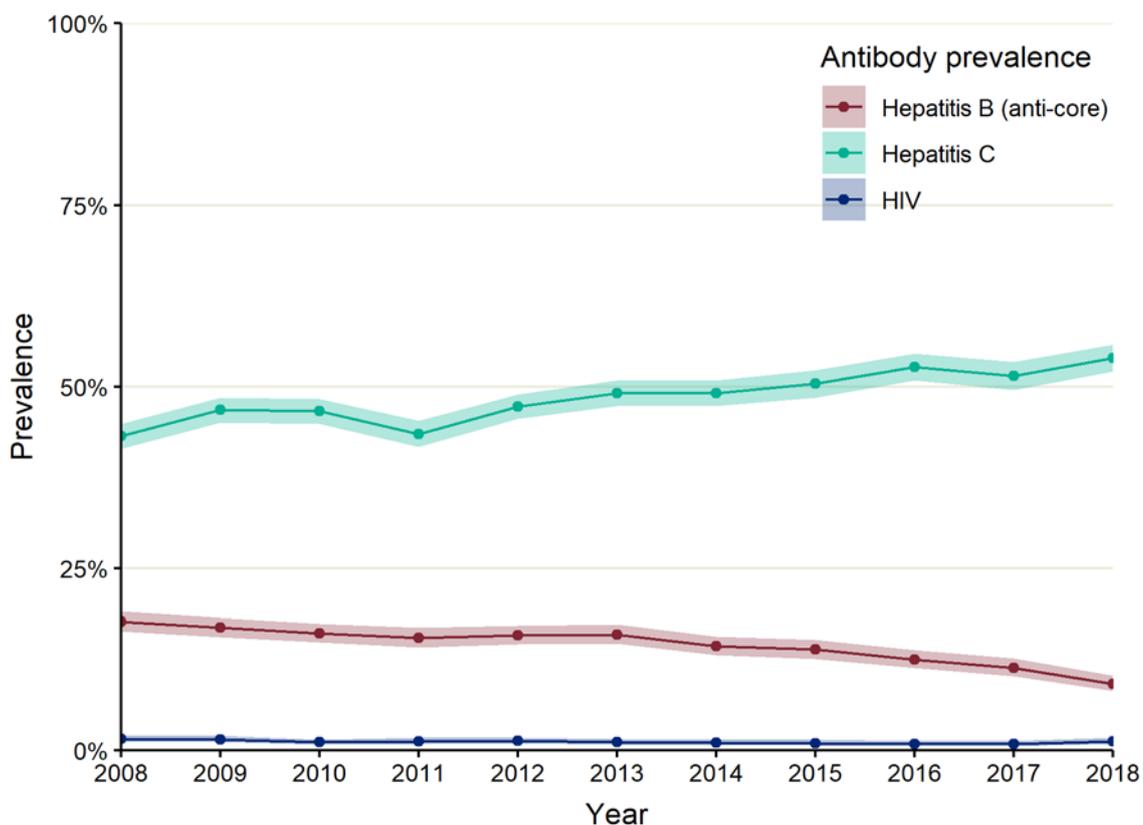


Figure 1. Map of drug and alcohol services participating in the 2018 UAM survey (see also Appendix 1)

Figure 2 shows the HIV, hepatitis B (anti-HBc) and hepatitis C antibody prevalence among PWID who took part in the UAM Survey across England, Wales and Northern Ireland between 2008 and 2018. Figures 3-5 show these prevalence figures for recent initiates to injecting drug use (those who first injected during the preceding three years), which is an indicator of recent transmission.

Figure 2. Prevalence of antibodies to HIV, hepatitis B core antigen and hepatitis C among participants in the UAM Survey of PWID: England, Wales and Northern Ireland: 2008-2018. Shaded area shows 95% confidence interval.

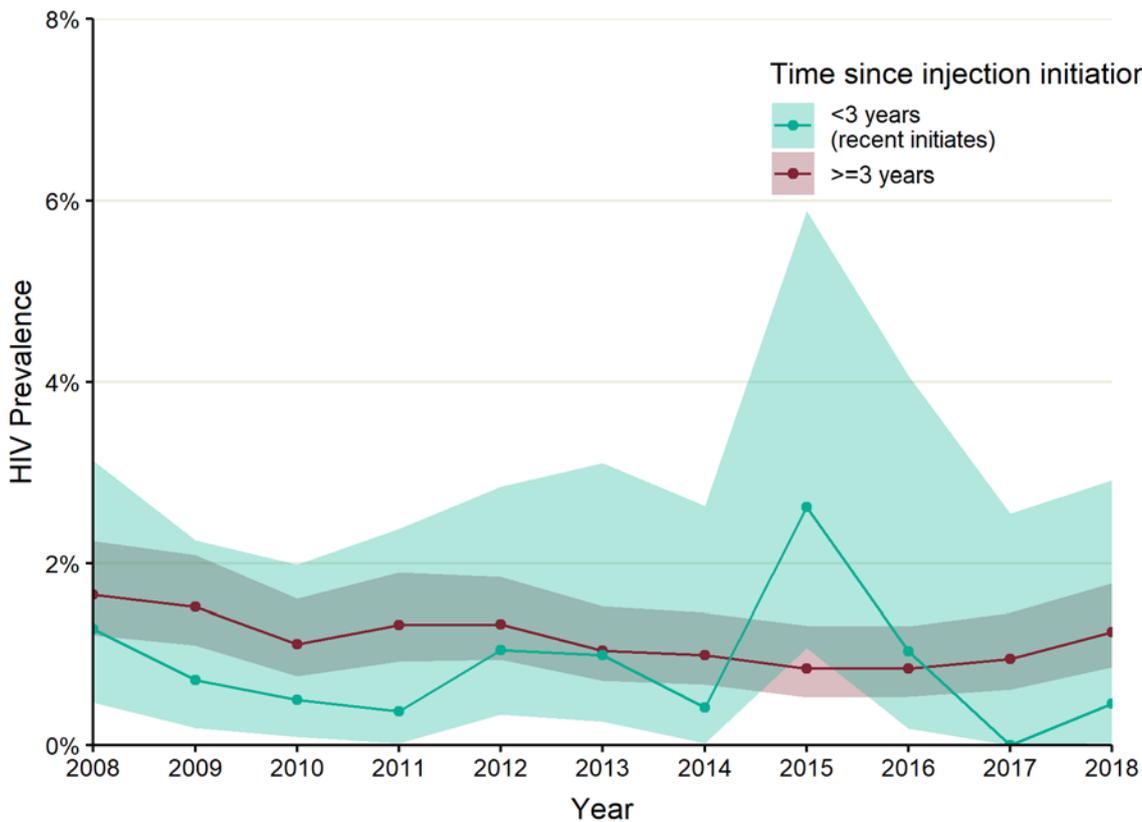


HIV prevalence

The prevalence of antibodies to HIV was 1.2% (95%CI 0.84%-1.7%) in 2018; this was not significantly different from that found in 2008 when the prevalence was 1.6% (95%CI 1.2%-2.1%) (Figure 2; Data Table 2, statistical note b). Between 2008 and 2018, prevalence varied between 1.6% and 0.85%. The HIV prevalence in Wales was 1.8% (95%CI 0.37%-5.1%, Data Table 22) and in Northern Ireland 1.2% (95%CI 0.03%-6.3%, Data Table 23) in 2018. In England, the HIV prevalence was 1.2% (95%CI 0.08%-1.6%, Data Table 12) in 2018, with the prevalence being higher in London (4.7%, 95%CI 2.9%-7.1%, Data Table 13) than in the rest of the country.

The HIV prevalence among recent initiates to injecting drug use is an indicator of recent transmission. The prevalence of HIV among the recent initiates taking part in the survey across England, Wales and Northern Ireland has fluctuated between 0% and 2.6% in the last decade, and was 0.46% (95%CI 0.0%-2.5%) in 2018 (Figure 3, Data Table 24, statistical note b).

Figure 3. Prevalence of anti-HIV among participants in the UAM Survey of PWID by time since first injecting: England, Wales and Northern Ireland: 2008-2018. Shaded area shows 95% confidence interval.

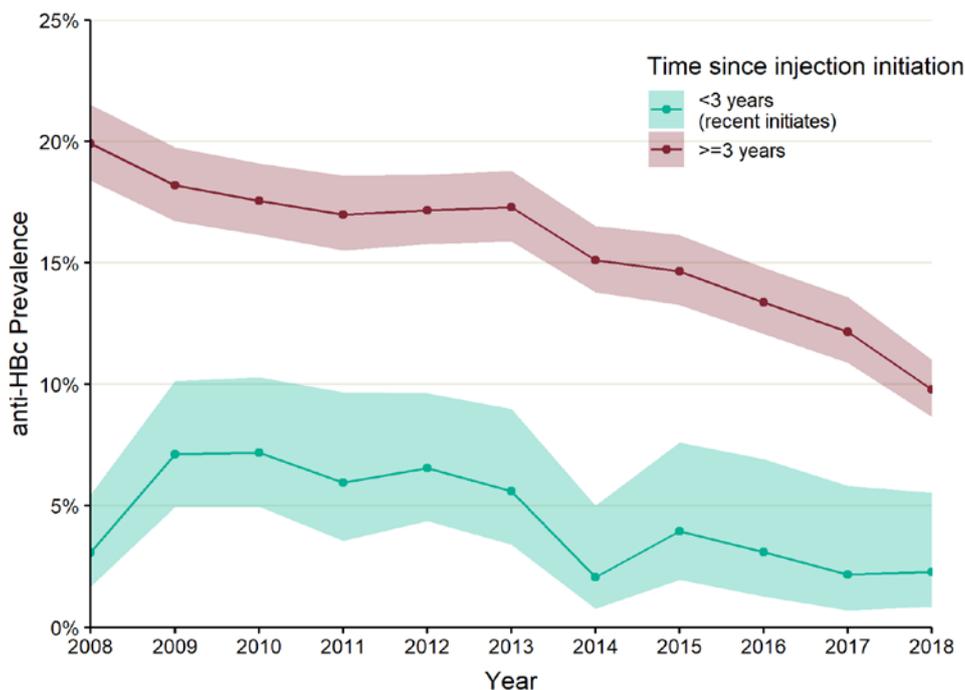


Hepatitis B prevalence

The prevalence of antibodies to the hepatitis B core antigen (anti-HBc, a marker of past or current infection with hepatitis B) among the survey participants across England, Wales and Northern Ireland was lower in 2018 (9.1%, 95%CI 8.1%-10%) than in 2008 (18%, 95%CI 16%-19%) (Figure 2; Data Table 3, statistical note c). By country, anti-HBc prevalence in 2018 was as follows: Northern Ireland, 0.0% (95%CI 0.0%-4.2%, Data Table 23); Wales, 11% (95%CI 6.4%-16%, Data Table 22); and England, 9% (95%CI 8.2%-11%, Data Table 12).

The prevalence of anti-HBc among the recent initiates to injecting drug use taking part in the survey across England, Wales and Northern Ireland was 2.3% (95%CI 0.75%-5.2%) in 2018; this is lower than 7.1% (95%CI 4.7%-11%) in 2009 when anti-HBc prevalence in this group was highest (Figure 4, Data Table 24, statistical note c).

Figure 4. Prevalence of anti-HBc among participants in the UAM Survey of PWID by time since first injecting: England, Wales and Northern Ireland: 2008-2018. Shaded area shows 95% confidence interval.



The samples that were positive for anti-HBc were also tested for hepatitis B surface antigen (HBsAg), a marker of current infection. In 2018, 4.7% (95%CI 2.4%-8.0%) of anti-HBc positive samples were HBsAg positive (Data Table 3). This represents 0.42% (95%CI 0.22%-0.74%) of all the PWID tested in the UAM survey in England, Wales and Northern Ireland in 2018.

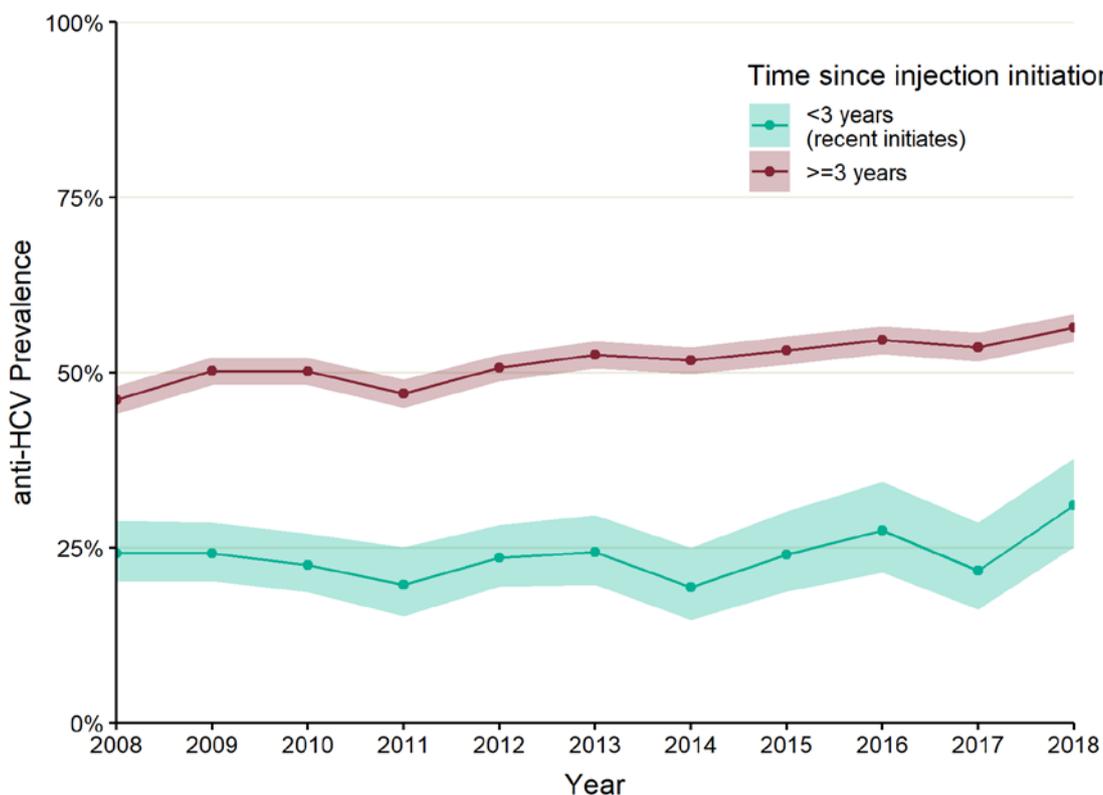
Hepatitis C prevalence

HCV antibody prevalence

The prevalence of antibodies to the hepatitis C virus (anti-HCV) among the survey participants across England, Wales and Northern Ireland was 54% (95%CI 52%-56%) in 2018. This is significantly higher than the anti-HCV prevalence of 43% (95%CI 41%-45%) seen in 2008, (Figure 2, Data Table 4, statistical note d). However, the level seen during the last decade is lower than that found in the early 1990s when prevalence was over 60% [4]. By country, anti-HCV prevalence in 2018 was as follows: Northern Ireland, 22% (95%CI 14%-32%; Data Table 23); Wales, 56% (95%CI 48%-63%; Data Table 22); and England, 55% (95%CI 53%-57%; Data Table 12). Although the anti-HCV prevalence in England and Wales has increased significantly over the last decade, in Northern Ireland, anti-HCV prevalence decreased over the last decade from 36% (95%CI 28%-45%) in 2008.

The prevalence of anti-HCV among the recent initiates taking part in the survey across England, Wales and Northern Ireland was 31% (95%CI 25%-38%) in 2018. This is higher than 24% (95%CI 20%-29%) reported in 2008, although this difference was not significant in the statistical analysis (Figure 5, Data Table 24, statistical note c).

Figure 5. Prevalence of anti-HCV among participants in the UAM Survey of PWID by time since first injecting: England, Wales and Northern Ireland: 2008-2018. Shaded area shows 95% confidence interval.

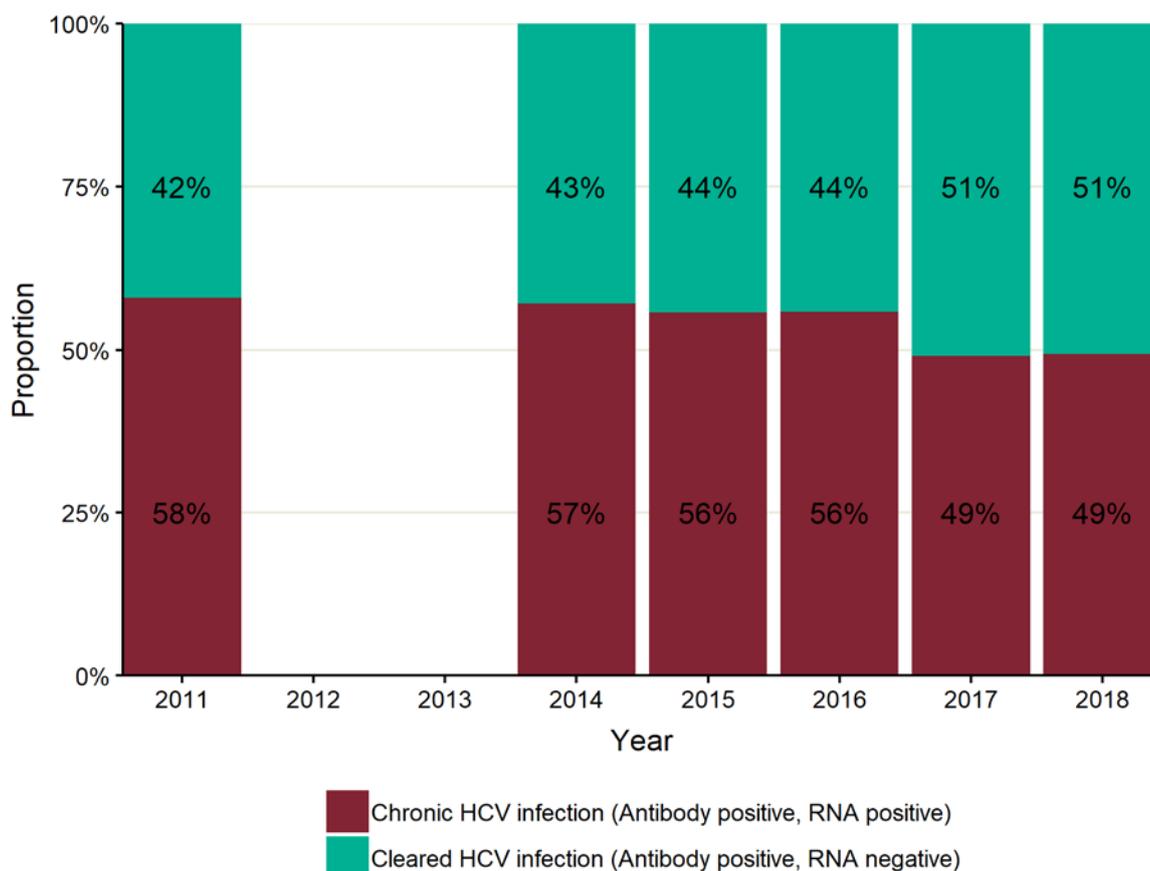


Chronic HCV prevalence (anti-HCV-positive, RNA-positive)

The prevalence of HCV RNA, an indicator of chronic HCV infection, has been measured in the 2017 and 2018 surveys and has been retrospectively measured for the survey years 2011 and 2014-2016 (data from 2012 and 2013 are awaited). Among those with anti-HCV, indicating ever having been infected with HCV, the prevalence of HCV RNA, indicating chronic HCV, among the survey participants across England, Wales and Northern Ireland was 49% (95%CI 47%-52%) in 2017 and 49% (95%CI 46%-52%) in 2018 (see table 3 of the dataset). This is lower than the prevalence of HCV RNA among those anti-HCV-positive in year 2011 and 2014-2016 (Figure 6, statistical note e). The decrease in viraemic prevalence (i.e. chronic HCV infection) in 2017 and 2018 corresponds with the timing of the scale-up of direct acting antiviral treatment against HCV among PWID since 2015 [4].

Among recent initiates, no decrease in chronic HCV infection in 2017 and 2018 was observed; the prevalence of HCV RNA was 54% (95%CI 37%-70%) in 2017 and 59% (95%CI 46%-71%) in 2018 as compared to 59% (95%CI 43%-73%) in 2011 (Data Table 24).

Figure 6. Prevalence of chronic HCV (RNA-positive) among anti-HCV-positive participants in the UAM Survey of PWID: England, Wales and Northern Ireland: 2011 and 2014-2018.



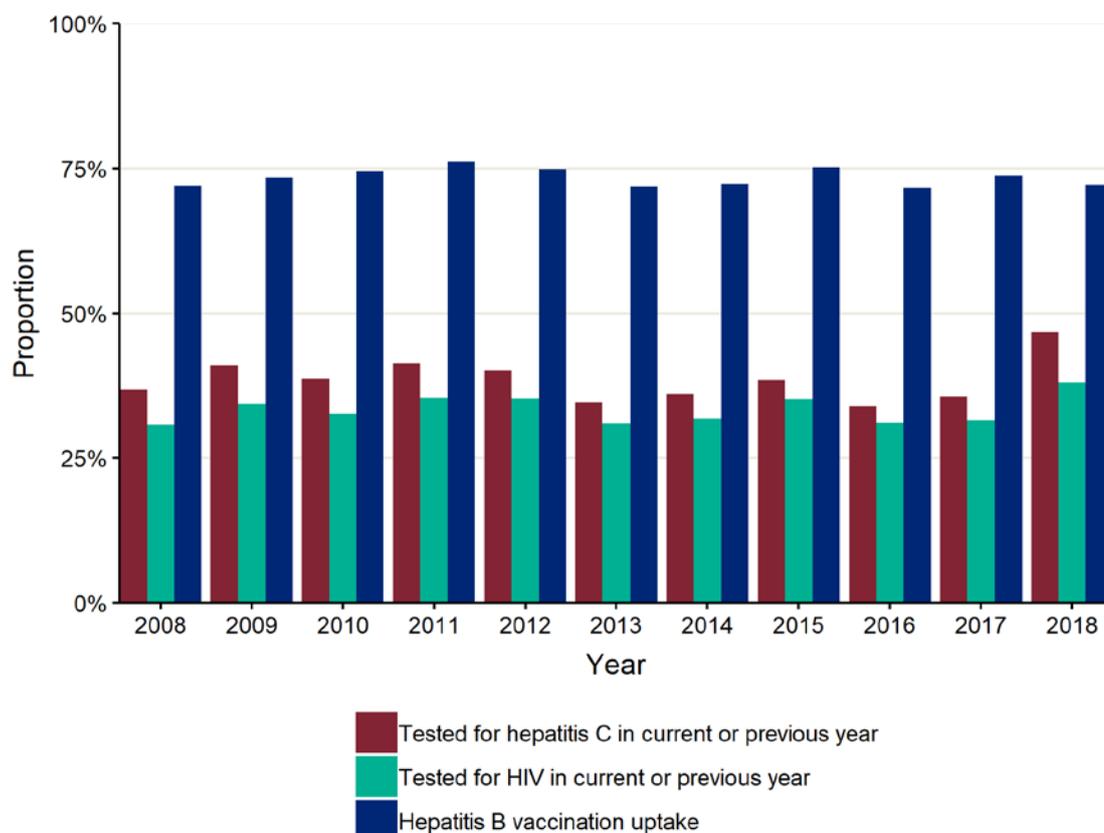
Retrospective analysis of HCV RNA (2011-2016) was performed as part of the EPIToPE study, funded by the National Institute for Health Research (NIHR) Programme Grants for Applied Research programme (Grant Reference Number RP-PG-0616-20008). The views expressed are those of the author(s) and not necessarily those of the NIHR or the Department of Health and Social Care.

Uptake of hepatitis B vaccination, blood-borne virus testing, and awareness of infection

Hepatitis B vaccination uptake

The survey also monitors, through self-reports, the uptake of hepatitis B vaccine (Figure 7, Data Table 7, statistical note f). Uptake of at least one dose of hepatitis B vaccine among the survey participants has plateaued at around 72% between 2008 and 2018 (2018: 72%, 95%CI 70%-74%). In 2018, hepatitis B vaccine uptake was particularly low in the under-25 age group at 48% (95%CI 35%-60%), which is a drop from 76% in 2011 (95%CI 70%-81%) when vaccine uptake was at its highest, and among recent initiates to injecting: 50% (95%CI 43%-57%), which is a drop from 67% in 2011 (95%CI 61%-73%) (Data Table 24). Vaccine uptake also decreased in the 25-34 years age group from 79% (95%CI 77%-82%) in 2011 when uptake was highest to 68% (95%CI 65%-72%) in 2018.

Figure 7. Uptake of hepatitis B vaccination, and of HCV and HIV testing in the current of previous year among participants in the UAM Survey of PWID: England, Wales and Northern Ireland: 2008-2018



HIV testing uptake and awareness of infection

The self-reported uptake of voluntary confidential diagnostic testing (VCT) for HIV among the survey participants across England, Wales and Northern Ireland has increased significantly since 2008; with the proportion reporting ever been tested for HIV rising from 73% (95%CI 71%-74%) in 2008 to 80% (95%CI 78%-81%) in 2018, and the proportion reporting been tested in the current or previous year increasing from 31% (95%CI 29%-32%) in 2008 to 38% (95%CI 36%-40%) in 2018 (Figure 7, Data Table 8; statistical note g). The proportion of the participants with antibodies to HIV, who reported that they were aware of their HIV infection was 97% (95%CI 82%-100%) in 2018, which is an increase from 64% (95%CI 48%-78%) in 2008.

HCV testing uptake and awareness of infection

There has also been a significant increase over the past decade in the self-reported uptake of VCT for hepatitis C by survey participants. The proportion of survey participants ever tested increased from 78% (95%CI 76%-79%) in 2008 to 85% (95%CI 84%-86%) in 2018, and the proportion tested in the current or previous year increased from 37% (95%CI 35%-38%) in 2008 to 47% (95%CI 45%-49%) in 2018, the highest it has been in the past decade (Figure 7; Data Table 9, statistical note h). Of those answering the question, the proportion of the participants with chronic hepatitis (anti-HCV and HCV RNA positive), who reported that they were aware of their chronic hepatitis C infection was 50% (95%CI 46%-54%) in 2018, indicating that half remain unaware of their diagnosis.

Among recent initiates to injecting, 71% (95%CI 65%-77%) reported ever uptake of VCT for hepatitis C, which is an increase from 62% (95%CI 57%-67%) in 2008, and 49% (95%CI 42%-56%) reported uptake of VCT for hepatitis C in the current or previous year, which is an increase from 38% (95%CI 33%-43%) in 2008 (Data Table 24).

Uptake of hepatitis C care and treatment

In 2018 among those with treatment status available, 39% (255/650, 95% CI 35%-43%; not included in data tables) of those anti-HCV positive and aware of ever having a HCV infection had seen a specialist nurse or doctor (hepatologist) for their hepatitis C and been offered and accepted treatment. This is an increase from 20% (94/466, 95% CI 17%-24%) in 2011, when the question was first asked in the UAM survey.

Symptoms of an infection at an injection site

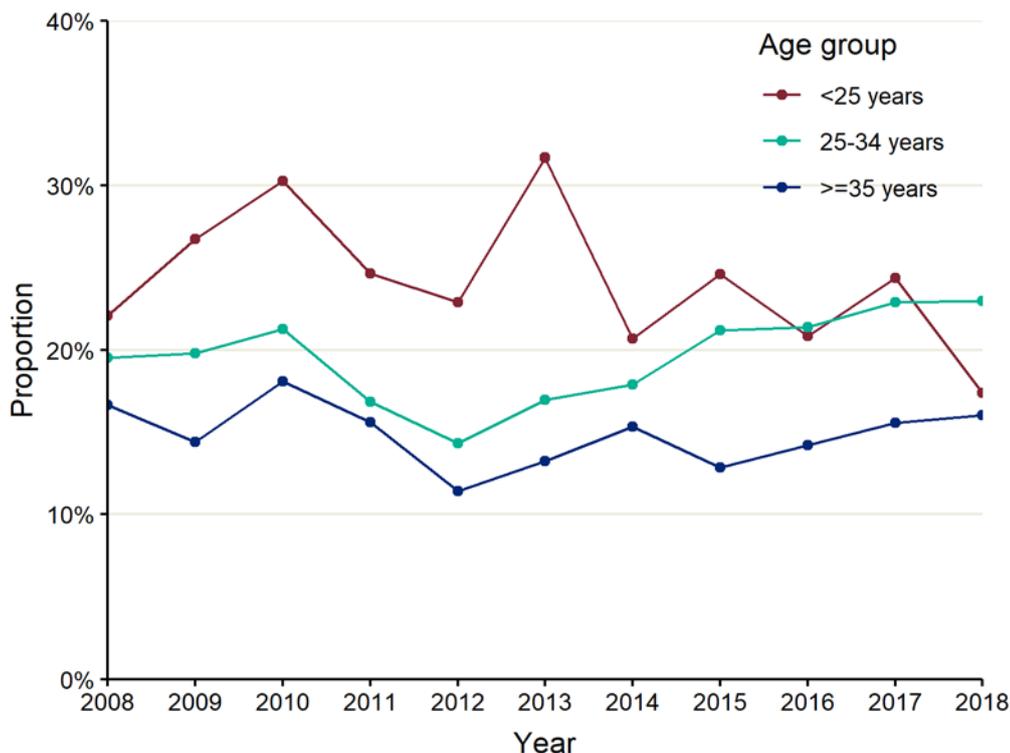
Symptoms of an injection site infection are common among PWID across England, Wales and Northern Ireland. In 2018, 54% (95%CI 51%-56%) of PWID who had injected during the preceding year reported that they had experienced an abscess, sore or open wound at an injection site during the preceding year, which is an increase from 50% (95%CI 47%-52%) in 2017 (Data Table 10, statistical note i). More females (59%, 95%CI 54%-63%) than males (52%, 95%CI 49%-55%) reported symptoms of an injection site infection. Questions regarding symptoms of injection site infections have been updated since 2017 and as a result, data collected in 2017 and 2018 is not comparable to previously collected data. Data from previous years can be found online [1].

Injecting risk behaviour

Needle and syringe sharing

Sharing of equipment used for injecting drug use is an important contributor to blood-borne virus transmission, including HIV, hepatitis B and hepatitis C [8-10]. The level of needle and syringe (direct) sharing reported by survey participants across England, Wales and Northern Ireland who had injected during the preceding four weeks was 18% (95%CI 16%-21%) in 2018; similar to levels seen in 2008 (19%, 95%CI 17%-21%), and an increase from 14% (95%CI 13%-16%) in 2012 when reported sharing levels were lowest (Data Table 5, statistical note j). Sharing of needles, syringes and other injecting paraphernalia such as filters and spoons (direct and indirect sharing) was reported by 39% (95%CI 37%-42%), a proportion which has remained relatively stable since 2008 (40%: 95%CI 36%-41%). Direct sharing of needles and syringes was reported by 14% (95%CI 9%-21%, Data Table 24) of recent initiates, which is not significantly different from levels reported in 2008 (17%, 95%CI 13%-23%) or 2012 (19%, 95% CI 14%-24%). Throughout the period 2008 to 2018 direct sharing was consistently higher among female than male participants; in 2018, 25% (95%CI 21%-30%) of females reported direct sharing compared to 16% (95%CI 14%-18%) of males. Levels of direct sharing in the 25-34 years age-group increased in recent years in the 25-34 years age-group: from 14% (95%CI 12%-17%) in 2012 when reported sharing levels were lowest to 23% (95% CI 19%-28%) in 2018, and in the ≥ 35 years age group from 12% (95%CI 9.4%-14%) in 2012 to 16% (95%CI 14%-18%) (Figure 8).

Figure 8 Levels of needle and syringe sharing by age group among the participants in the UAM Survey of PWID who had injected during the preceding four weeks: England, Wales and Northern Ireland: 2008-2018



Injection into the groin

Injecting into the groin has been associated with a number of complications, including damage to the femoral vein and artery, injecting site infections and vascular problems [11, 12]. The proportion of current PWID who reported injecting into their groin was 37% in 2018 (95%CI 35%-40%, Data Table 1), which is an increase from 32% (95%CI 30%-34%) in 2008 (Data Table 1, statistical note k). By country, the proportion injecting into the groin in 2018 was as follows: England 37% (95%CI 34%-40%, Data Table 12); Wales, 41% (95%CI 31%-51%, Data Table 22); Northern Ireland 42% (95%CI 25%-61%, Data Table 23; data pooled for 2017 and 2018 due to small numbers)

Number of “missed hits”

In 2017 and 2018 a new question was added to the UAM Survey to monitor the number of times an individual inserted a needle before getting a “hit” the last time they injected. Missed hits resulting in subcutaneous injecting are associated with symptoms of an injection site infection [13]. In 2018, more than half of participants who injected in the last year (59%, 1,067/1,813, 95%CI 57%-61%; not included in data tables) reported they injected more than once before getting a “hit”, and 22% (396/1,813, 95%CI 20%-24%) reported they inserted a needle four or more times before getting a “hit”.

Sexual risk behaviour

PWID are also at risk of acquiring and transmitting blood borne viruses, particularly HIV, through sexual transmission [14]. In 2018, 60% (95%CI 58%-62%) of the participants reported having anal or vaginal sex during the preceding year, which is a decrease from 75% (95%CI 73%-76%) in 2008 (Data Table 11, statistical note l). Sex in the last year was more commonly reported by female (68%, 95%CI 65%-72%) than male survey participants (57%, 95%CI 55%-59%) during 2018. Of the survey participants who report sex in the preceding year, 40% (95%CI 38%-43%) reported having had two or more sexual partners during that time and, of these, only 19% (95%CI 16%-23%) reported always using condoms for anal or vaginal sex. Reporting sex with two or more partners in the last year was more common among male (43%, 95%CI 40%-46%) than female (34%, 95%CI 29%-38%) survey participants in 2018. Among those with two or more sexual partners in the last year, 21% (95%CI 14%-30%) of females and 18% (95%CI 14%-23%) of males reported always using a condom.

Environmental risk factors

Homelessness and imprisonment have been associated with increased risk of hepatitis C [15, 16] and bacterial infections [17, 18], and recent release from prison has been associated with overdosing [19]. Two-thirds (67%, 95%CI 66%-69%) of the UAM survey participants in 2018 reported ever being in prison, which is similar to previous survey years (Data Table 1, statistical note m). The proportion of participants who reported being homeless or having been homeless during the last year has increased from 34% (95%CI 32%-36%) in 2008 to 47% (95%CI 45%-49%) in 2018 (Data Table 1, statistical note m).

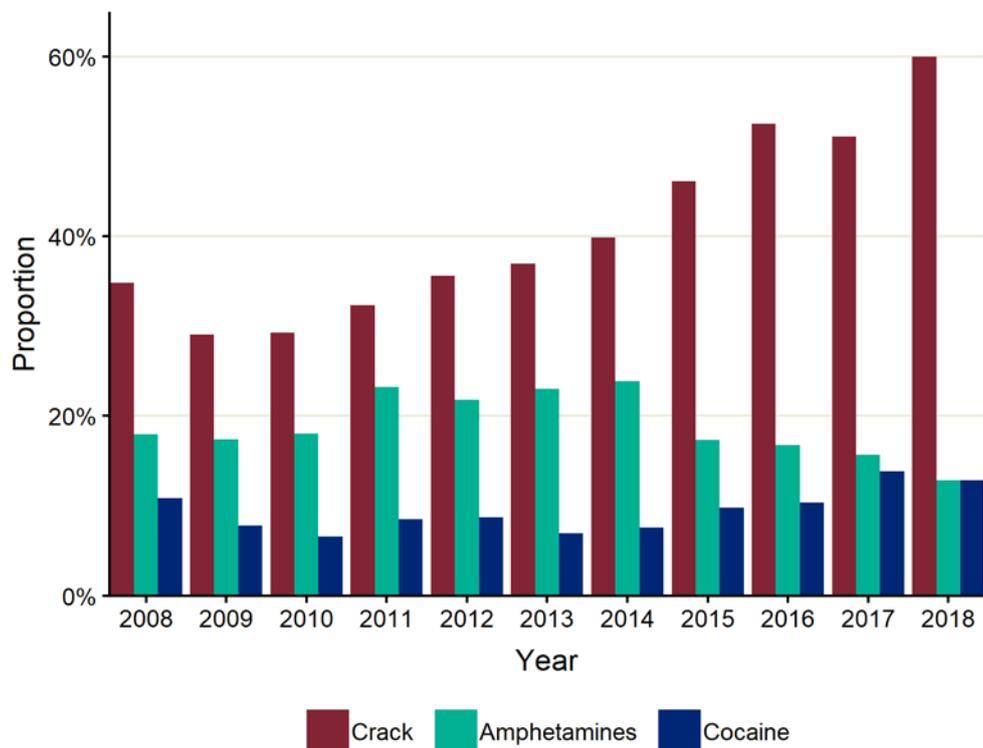
Needle exchange use and drug treatment uptake

The majority of PWID who participated in the UAM survey in 2018 had ever accessed a needle exchange (91%, 95%CI 90%-92%), a proportion which has remained relatively stable over the last decade (Data Table 1). During 2018, 77% (95%CI 75%-78%) of the survey participants reported current engagement with treatment for their drug use, i.e. uptake of a detox or maintenance medicine, an increase from that seen in 2008 (70%, 95%CI 68%-72%) (statistical note n).

Drug trends

Heroin remains the most commonly injected drug in 2018 as reported by 94% (1,354/1,439, 95%CI 93%-95%; not included in data tables) of those who had injected in the preceding four weeks. Injection of crack further increased in 2018, with 60% (95%CI 57%-63%) of those who had injected in the preceding four weeks reporting crack injection as compared to 51% (95%CI 48%-54%) in 2017 and 35% (95%CI 33%-37%) in 2008 (Data Table 1, Figure 9, statistical note o). A significant increase was observed in Wales and in most regions in England (Data Tables 12-23). Crack injection also increased among the recent initiates, with 61% (52%-69%) of those who had injected in the preceding four weeks reporting crack injection in 2018, vs. 45% (95%CI 35%-54%) in 2017 and 26% (95%CI 21%-32%) in 2008 (Data Table 24). There was a slight increase in the injection of other forms of cocaine (13%, 95%CI 11%-15% in 2018 vs 11%, 95%CI 9%-12% in 2008) among those who had injected in the preceding four weeks. Injection of amphetamine decreased in 2018 (13%, 95%CI 11%-15%) as compared to 2008 (18%, 95%CI 16%-20%).

Figure 9. Levels of crack, amphetamines and cocaine use among the participants in the UAM Survey of PWID who had injected during the preceding four weeks: England, Wales and Northern Ireland: 2008-2018



Non-fatal overdose and naloxone use

Although there were slight falls in 2017, the number of drug misuse deaths registered every year in England and Wales increased significantly during the period 2012-2016, and deaths involving heroin more than doubled during this period to the highest number since records began [20]. Through the UAM Survey, data is available to monitor trends in self-reported non-fatal overdose among PWID as well as the carriage and use of the antidote naloxone. Among the participants who took part in the UAM Survey in 2018 reporting injecting during the preceding 12 months, 21% (95%CI 20%-23%) reported overdosing in the preceding year compared to 16% (95%CI 14%-17%) in 2013 when first measured (Data Table 25, statistical note p). Overdose reporting between 2013 and 2018 increased in all age groups: from 23% (95%CI 16%-30%) to 42% (95%CI 28%-56%) in those under-25 years, from 15% (95%CI 12%-17%) to 26% (95%CI 22%-30%) in those 25-34 years and from 15% (95%CI 13%-17%) to 19% (95%CI 17%-21%) in those 35 years and over. Self-reported overdose in 2018 was lowest among those who were currently in treatment for their drug use (i.e. those being prescribed a detox or maintenance drug medicine; 19% (95%CI 17%-22%)). Self-reported overdose was 27% (95%CI 22%-32%) among PWID who had previously been, but were not currently in treatment and was highest among those who had never been in treatment (31%, 95%CI 22%-40%). In 2018, among recent injectors, 65% (95%CI 62%-67%) reported carrying naloxone, which is an increase from 54% (95%CI 52%-57%) in 2017. Just over half (55%, 95%CI 49%-61%) of those who reported overdosing in the preceding year reported having had naloxone administered, an increase from 44% (95%CI 38%-50%) in 2013.

Conclusion

In conclusion, data from the UAM Survey of PWID, which is targeted at people who inject psychoactive drugs, indicate that there is an ageing cohort of PWID. The proportion of UAM participants positive for anti-HBc has declined. The explanation for the decline is unclear but could reflect a decline in exposure to hepatitis B over time, as a result of increased uptake of hepatitis B vaccination, and/or harm reduction interventions. Anti-HBc titres could also be waning with time after resolution of hepatitis B [21, 22]. The prevalence of HIV remains stable and low. Hepatitis C remains the most common infection among this group. Although the prevalence of anti-HCV (indicating *ever* infection) have increased since 2008, the proportion of UAM participants with anti-HCV who are HCV RNA positive has decreased from 58% in 2011 to 49% in 2017 and 2018. The relative decline in HCV RNA compared to the increase in anti-HCV prevalence corresponds with the timing of the scale-up of direct acting antiviral treatment for HCV among PWID and could reflect an early impact of treatment and viral clearance in this group. The proportion of those anti-HCV positive and aware of their infection who have seen a specialist nurse or physician for their hepatitis C, and have been offered and accepted treatment was 39% in 2018.

Concurrent increases in testing have also been observed with the proportion of UAM participants who reported having a hepatitis C test in the current or previous year reaching 47% in 2018. The proportion of those anti-HCV positive and aware of their infection who had seen a specialist nurse or physician for their hepatitis C and have been offered and accepted treatment was 39% in 2018. Hepatitis B vaccine uptake has plateaued at 72% since 2008, and was particularly low in the under-25 age group and among recent initiates, with only approximately half reporting vaccination.

Reported needle and syringe sharing has plateaued over the last decade, however, direct sharing has increased in recent years among the 25-34 and ≥ 35 year age groups. More than half of those who injected during the preceding year reported an abscess, sore or open wound at an injection site, and levels reported were higher in 2018 than in 2017. Injection of crack has further increased in 2018, as has reported homelessness during the last year.

Recent initiates to injecting remain at risk of HIV and hepatitis B and C. The level of hepatitis C infection among the recent initiates to injecting participating in this survey are not suggestive of a decline in hepatitis C transmission in recent years. Vaccination for hepatitis B has declined in this group with only approximately half reporting vaccination in 2017. Hepatitis B vaccination should be encouraged, particularly in younger individuals and recent initiates to injecting.

Non-fatal overdoses have been increasing, as have overdose deaths since 2013 [23]. Just over half of those overdosing in the previous year were administered naloxone. Naloxone carriage has increased in 2018 as compared to 2017. Local areas should ensure the ready accessibility of their commissioned opioid substitution treatment (OST), needle and syringe programmes and take-home naloxone to all who need them. Older PWID, those who inject multiple drugs, those with a recent overdose, and those with co-existing alcohol and mental health problems are all known to be at higher risk [19, 23-30].

Additionally, those who have recently been released from prison, discharged from hospital or stopped treatment have a lower opioid tolerance and are key risk groups to identify and engage in harm reduction interventions and overdose prevention initiatives [30].

There is a need to improve awareness of hepatitis C in this high-risk group, as ignorance of their diagnosis was observed in half the surveyed cohort. Expansion of HCV testing and referral to care, and uptake of treatment are required to reach the WHO goal of elimination of viral hepatitis by 2030 [4, 31]. Services should aim to make testing for blood-borne viruses available for patients at first assessment and during follow up [30]. An HCV RNA test is required for anti-HCV positive individuals who inject drugs and reflex testing of anti-HCV positive samples for the presence of HCV RNA should be recommended in line with current NICE guidelines, where laboratories automatically test samples positive for anti-HCV for the presence of HCV RNA, or refer the sample to a laboratory which can perform this test. When the risk is assessed as high, repeat testing is required up to twice a year [30, 31].

Together, these findings indicate that unsafe injecting continues to be a problem and that there is a need to maintain and strengthen public health interventions that aim to reduce injection related risk behaviours. The impact of public health interventions which aim to prevent HIV and hepatitis C infection through injecting drug use by reducing these risks, such as needle and syringe programmes [30, 32] and opioid substitution therapy [30] have been shown to be dependent on their coverage [33]. The provision of interventions that aim to reduce infections among PWID, including testing and vaccination programmes, should be regularly reviewed to ensure that the coverage of these is appropriate to local need.

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Appendix 1: Participating centres

England

North East

Seaham DISC
Redcar Addaction
Gateshead Needle Exchange
Newcastle CGL

North West

Addaction Central ARC, Liverpool
Addaction North ARC, Liverpool
Manchester CGL Bradnor Point
Manchester CGL Carnarvon
Achieve Bolton
Bootle, Ambition Sefton
Achieve Salford Recovery Service
Blackpool Horizon
Tameside CGL
Carlisle NHS Unity
Blackburn CGL
Knowsley CGL

Yorkshire and the Humber

Forward Leeds
Kirklees Lifeline, Huddersfield
Kirklees Lifeline, Dewsbury
Grimsby, Foundations Alcohol and Drug Service
Kidderminster, Swanswell Worcestershire
Calderdale Recovery Steps

East Midlands

Ilkeston, Derbyshire NHS
Ripley, Derbyshire NHS
Swadlincote, Derbyshire NHS
Boston, Lincolnshire Addaction
Gainsborough, Lincolnshire Addaction
Grantham, Lincolnshire Addaction
Lincoln, Lincolnshire Addaction
Northamptonshire S2S CGL
Chesterfield, Derbyshire NHS
Derby City, Derbyshire NHS

West Midlands

Leamington Spa CGL
Nuneaton CGL
Walsall CGL, The Beacon
Coventry CGL
Telford Stars
Herefordshire Addaction

East of England

Norwich CGL
Harlow, Essex Stars
Colchester, Essex Stars
Basildon, Essex Stars
Chelmsford, Essex Stars
Peterborough Aspire CGL
Great Yarmouth CGL
Thurrock Inclusion Visions
Kings Lynn CGL

South West

Bournemouth BEAT Addaction
Dorset Reach EDP, Christchurch & East
Dorset Reach EDP, North Dorset
Dorset Reach EDP, Weymouth & West
Torbay District Addictions Service - Walnut Lodge
Poole NSP
Bristol Drug Project
Yeovil Turning Point, Somerset Drug & Alcohol Service
Frome Turning Point, Somerset Drug & Alcohol Service
Taunton Turning Point, Somerset Drug & Alcohol Service
Chippenham WSMS
Trowbridge WSMS
Cornwall Addaction
Gloucestershire CGL
Stroud CGL
Bath, B&NES Drug and Alcohol Treatment Service
Minehead CGL
Torbay District Addictions Service, Shrublands

London

The Grove Drug Treatment Service, Haringey
Waltham Forest CGL
Newham CGL
Barnet Recovery Centre, Edgware
Southwark CGL
Lewisham CGL, New Direction
New Beginnings Harlesden
Westminster Drug & Alcohol Wellbeing Service
Hammersmith & Fulham DAWS
Barnet WDP, Hendon
Kingston Wellbeing Service
Islington, Better Lives
Lambeth Drug and Alcohol Service

Wales

Cardiff On Site Dispensing Service (DATT)
North Wales NSP & Harm Reduction Service
The Valleys
Cardiff & Vale (Newlands)
Swansea Barod

South East

Dover RAPt
Canterbury, Forward Trust
Margate RAPt
Forward Ashford
SHARP, Southampton HR Service
Reading Inclusion, Iris
STAR Hastings CGL
Hampshire Inclusion Recovery
Eastbourne, STAR CGL
Brighton Titration, Pavilions
Banbury Turning Point, Oxfordshire Roads to Recovery
Oxford, Turning Point Oxfordshire Roads to Recovery
Didcot Turning Point, Oxfordshire Roads to Recovery

Northern Ireland

Ballymena Railway Community Addiction Service
Belfast Substitute Prescribing Team
Newtownards Community Addiction Team
South Eastern Trust (Downshire and Lisburn)
St Lukes Hospital Community Addictions Team

Appendix 2: Statistical notes

All analyses were adjusted for age, gender and region of recruitment (English NUTS Regions, Wales, Northern Ireland) in a multi-variable analysis, unless specified otherwise. For analyses on HIV prevalence, region of recruitment was specified as London vs. elsewhere to account for the small number of positive samples. Non-aggregated regional data were used in all other analyses. Results shown are for England, Wales and Northern Ireland combined, unless specified otherwise.

- a) **Demographics: Gender:** The adjusted odds ratio for 2018 vs. 2008 was 0.79 (95%CI 0.70-0.89); indicating a significant decrease in the proportion male between these two years. **Age:** The adjusted odds ratio for 2018 vs. 2008 was 0.15 (95%CI 0.12-0.20); indicating a significant decrease in the proportion of participants under 25 years of age between these two years. **Injected in last year:** The adjusted odds ratio for 2018 vs. 2008 was 0.70 (95%CI 0.62-0.79); indicating a significant decrease in the proportion reporting they had injected in the last year.
- b) **HIV prevalence:** The adjusted odds ratio for 2018 vs. 2008 was 0.77 (95%CI 0.50-1.2); indicating no significant change in the HIV prevalence between these two years. **Recent initiates:** HIV prevalence among the recent initiates fluctuated between 2008 and 2018, with an adjusted odds ratio of 0.25 (95%CI 0.03-2.2) for 2018 vs. 2008; indicating no significant change in prevalence between these two years.
- c) **Hepatitis B core antigen antibody (anti-HBc) prevalence:** The adjusted odds ratio for 2018 vs. 2008 was 0.41 (95%CI 0.34-0.49); indicating a significant decrease in 2018 as compared to 2008. Prevalence was significantly lower than in 2008 from 2014 onwards. **Recent initiates (2009 vs 2019):** The adjusted odds ratio for 2018 vs. 2009 was 0.28 (95%CI 0.10-0.83), indicating a significant decrease between these two years.
- d) **Hepatitis C antibody prevalence:** The adjusted odds ratio for 2018 vs. 2008 was 1.4 (95%CI 1.2-1.5); indicating a significant increase in hepatitis C prevalence between these two years. **England:** The adjusted odds ratio for 2018 vs. 2008 was 1.4 (95%CI 1.2-1.6); indicating a significant change in hepatitis C prevalence in England between these two years. **Wales:** The adjusted odds ratio for 2018 vs. 2008 was 2.4 (95%CI 1.5-3.9); indicating a significant change in hepatitis C prevalence in Wales over time. The prevalence in 2013-2017 was also significantly higher than in 2008. **Northern Ireland:** The adjusted odds ratio for 2018 vs. 2008 was 0.48 (95%CI 0.25-0.93); indicating a significant decrease in hepatitis C prevalence in Northern Ireland when comparing 2018 to 2008. **Recent initiates:** The adjusted odds ratio for 2018 vs. 2008 was 1.3 (95%CI 0.87-2.0); indicating no change in the hepatitis C prevalence among the recent initiates between these years.
- e) **Chronic hepatitis C prevalence (anti-HCV positive, RNA-positive):** The adjusted odds ratio for 2018 vs. 2011 was 0.73 (95%CI 0.62-0.86), and for 2017 vs. 2011 was 0.73 (95%CI 0.62-0.86), indicating a significant decrease in hepatitis C RNA prevalence among those antibody positive between 2017 and 2011 and between 2018 and 2011. No significant decrease was observed for years 2014-2016.
- f) **Hepatitis B vaccine uptake:** The adjusted odds ratio for 2018 vs. 2008 was 1.1 (95%CI 0.96-1.2); indicating no significant change in hepatitis B vaccine uptake when comparing 2018 to 2008. **Recent initiates and under-25 and 25-34 age groups (2018 vs 2011):** The adjusted odds ratios for 2018 vs. 2011 amongst the under-25 age group, 25-34 age group, and among recent initiates were 0.27 (95%CI 0.15-0.49), 0.57 (95%CI 0.45-0.72), and 0.47 (95%CI 0.33-0.97) respectively, indicating significant decreases in reported vaccine uptake when comparing 2018 to 2011.
- g) **Voluntary confidential testing (VCT) for HIV: Ever tested:** The adjusted odds ratio for 2018 vs 2008 was 1.4 (95%CI 1.3-1.6); indicating a significant increase in the reported uptake of VCT for HIV when comparing 2018 to 2008. **Recently tested (current or previous year):** The adjusted odds ratio for 2018 vs 2008 was 1.5 (95%CI 1.3-1.6); indicating a significant increase in the reported uptake of a recent VCT for HIV when comparing 2018 to 2008. **Awareness of HIV infection:** The adjusted odds ratio for 2018 vs. 2008 was 15.7 (95%CI 1.9-130); indicating a significant increase in awareness of HIV when comparing 2018 to 2008.

- h) **Voluntary confidential testing (VCT) for hepatitis C: *Ever tested*:** The adjusted odds ratio for 2018 vs. 2008 was 1.5 (95%CI 1.3-1.7), indicating a significant increase in the reported uptake of VCT for hepatitis C. ***Ever tested, recent initiates*:** Among recent initiates, the adjusted odds ratio for 2018 vs. 2008 was 1.5 (95%CI 1.0-2.2), indicating a significant increase in the reported uptake of VCT for hepatitis C. ***Recently tested (current or previous year)*:** The adjusted odds ratio for 2018 vs 2008 was 1.6 (95%CI 1.4-1.8); indicating a significant increase in the reported uptake of a recent VCT for HCV when comparing 2018 to 2008. ***Recently tested (current or previous year), recent initiates*:** The adjusted odds ratio for 2018 vs 2008 was 1.6 (95%CI 1.1-2.2); indicating a significant increase in the reported uptake of a recent VCT for HCV when comparing 2018 to 2008.
- i) **Symptoms of an infection at an injecting site:** The adjusted odds ratio for 2018 vs. 2017 was 1.2 (95%CI 1.03-1.4), indicating a significant increase in the proportion reporting symptoms of infection at an injecting site. ***Gender*:** The adjusted odds ratio for females vs. males was 1.3 (95%CI 1.1-1.5), indicating females were significantly more likely to report symptoms of infection at an injecting site than males.
- j) **Direct sharing (sharing of needles and syringes):** The adjusted odds ratio for 2018 vs. 2008 was 0.97 (95%CI 0.81-1.2), indicating no significant change in reported direct sharing in 2018 as compared to 2008. The adjusted odds ratio for 2018 vs. 2012 was 1.4 (95%CI 1.1-1.7), indicating reported direct sharing was higher in 2018 as compared to 2012. ***Recent initiates*:** Among recent initiates, the adjusted odds ratio for 2018 vs. 2008 was 0.97 (95%CI 0.53-1.8), indicating no change in direct sharing in 2018 as compared to 2008. Among recent initiates, the adjusted odds ratio for 2018 vs. 2012 was 0.77 (95%CI 0.42-1.4), indicating no change in direct sharing in 2018 as compared to 2012. ***Gender*:** The adjusted odds ratio for females vs. males in 2018 was 1.8 (95%CI 1.4-2.4), indicating significant higher levels of direct sharing in females as compared to males. ***Age group*:** Among the 25-34 years age group, the adjusted odds ratio for 2018 vs. 2012 was 1.8 (95%CI 1.3-2.5), and among the ≥35 years age group the adjusted odds ratio for 2018 vs 2012 was 1.48 (95%CI 1.1-2.0), indicating that direct sharing among these age groups was significantly higher in 2018 than in 2012. Among the <25 years age group, the adjusted odds ratio for 2018 vs 2012 was 0.72 (95%CI 0.31-1.7), indicating no significant change in 2018 as compared to 2012.
- k) **Injecting into the groin:** The adjusted odds ratio for 2018 vs. 2008 was 1.2 (95%CI 1.1-1.4), indicating that reported injecting into the groin in the last year was higher in 2018 than in 2008.
- l) **Sex:** The adjusted odds ratio for 2018 vs. 2008 was 0.55 (95%CI 0.50-0.63), indicating that reported sex in the last year was lower in 2018 than in 2008. ***Gender*:** When comparing reported sex in the last year among males vs females, the adjusted odd ratio for 2018 was 0.65 (95%CI 0.54-0.78), indicating that sex in the last year was significantly less commonly reported by males than females. ***Gender- number of partners*:** The adjusted odds ratio for males vs. females reporting two more sexual partners in the past year was 1.6 (95%CI 1.3-2.0) indicating that males were significantly more likely to report two or more sexual partners in the last year than females. ***Gender- condom use*:** The adjusted odds ratio for males vs. females reporting two more sexual partners in the past year and always using a condom was 0.78 (95%CI 0.46-1.3) indicating there was no significant difference between males and females.
- m) **Environmental risk factors: *Ever in prison*:** The adjusted odds ratio for 2018 vs. 2008 was 0.95 (95%CI 0.84-1.1); indicating no significant difference in the proportion of participants reporting ever been in prison between those two years. ***Homeless in last year*:** The adjusted odds ratio for 2018 vs. 2008 was 1.9 (95%CI 1.7-2.1); indicating a significant increase in the proportion of participants reporting having been homeless in the last year between these two years.
- n) **Drug treatment uptake:** The adjusted odds ratio for 2018 vs. 2008 was 1.4 (95%CI 1.3-1.6); indicating a significant increase in the proportion of participants reporting being currently in treatment for drug use between these two years.
- o) **Stimulant drugs injected during preceding month: *Crack*:** The adjusted odds ratio for crack injection for 2018 vs. 2008 was 3.0 (95%CI 2.6-3.5), indicating that crack injection was higher in 2018 than in 2008. The adjusted odds ratio for crack injection for 2018 vs. 2017 was 1.2 (95%CI 1.0-1.4), indicating that crack injection was higher in 2018 than in 2017. ***Crack-recent initiates*:** The

adjusted odds ratio was 4.7 (95%CI 2.9-7.7) for recent initiates when comparing 2018 to 2008, indicating crack injection was significantly higher in 2018 than in 2008. **Crack-by region/country:** Adjusted odds ratios and 95%CIs for crack injection in 2018 vs. 2008 by region and country: East of England: 4.5 (95%CI 2.3-8.5), London: 1.9 (1.2-2.8), South East: 3.1 (2.6-4.5), South West 4.8 (3.1-7.7), West Midlands: 4.1 (2.5-6.7), North West: 1.4 (0.92-2.1), Yorkshire & Humber: 2.9 (1.4-6.0), East Midlands: 4.3 (2.7-6.8), North East: 2.1 (0.79-5.8), Wales: 5.7 (2.5-12.7), Northern Ireland: 2.8 (0.17-48), indicating significant increases in East of England, London, South East, South West, West Midlands, Yorkshire & Humber and East Midlands and Wales. **Cocaine:** the adjusted odds ratio for cocaine injection for 2018 vs. 2008 was 1.3 (95%CI 1.0-1.6), indicating a significant increase in cocaine injection. **Amphetamine:** the adjusted odds ratio for amphetamine injection for 2018 vs. 2008 was 0.67 (95%CI 0.54-0.82), indicating a significant decrease.

- p) **Overdose and naloxone:** The adjusted odds ratio for 2018 vs. 2013 was 1.5 (95%CI 1.3-1.7), indicating that reported overdosing was higher in 2018 than in 2013. **Age group:** The adjusted odds ratios for 2018 vs. 2013 amongst the under-25 age group, 25-34 age group, and 35 and older age groups were 2.6 (95%CI 1.4-5.1), 1.9 (95%CI 1.4-2.5), and 1.4 (95%CI 1.1-1.7) respectively, indicating significant increases in reported overdosing in all three age groups. **Treatment:** in 2018, the adjusted odds was 1.6 (95%CI 1.2-2.1) and 1.8 (95%CI 1.2-2.8) for those previously prescribed treatment and never prescribed treatment respectively vs those currently prescribed treatment, indicating that reported overdose was higher in those previously prescribed treatment or never prescribed treatment. **Naloxone administration:** The adjusted odds ratio for 2018 vs. 2013 was 1.5 (95%CI 1.1-2.2), indicating that reported administration of naloxone after overdosing was higher in 2018 than in 2013. **Naloxone carriage:** The adjusted odds ratio for 2018 vs. 2017 was 1.4 (95%CI 1.2-1.6), indicating that reported carriage of naloxone was higher in 2018 than in 2017.

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