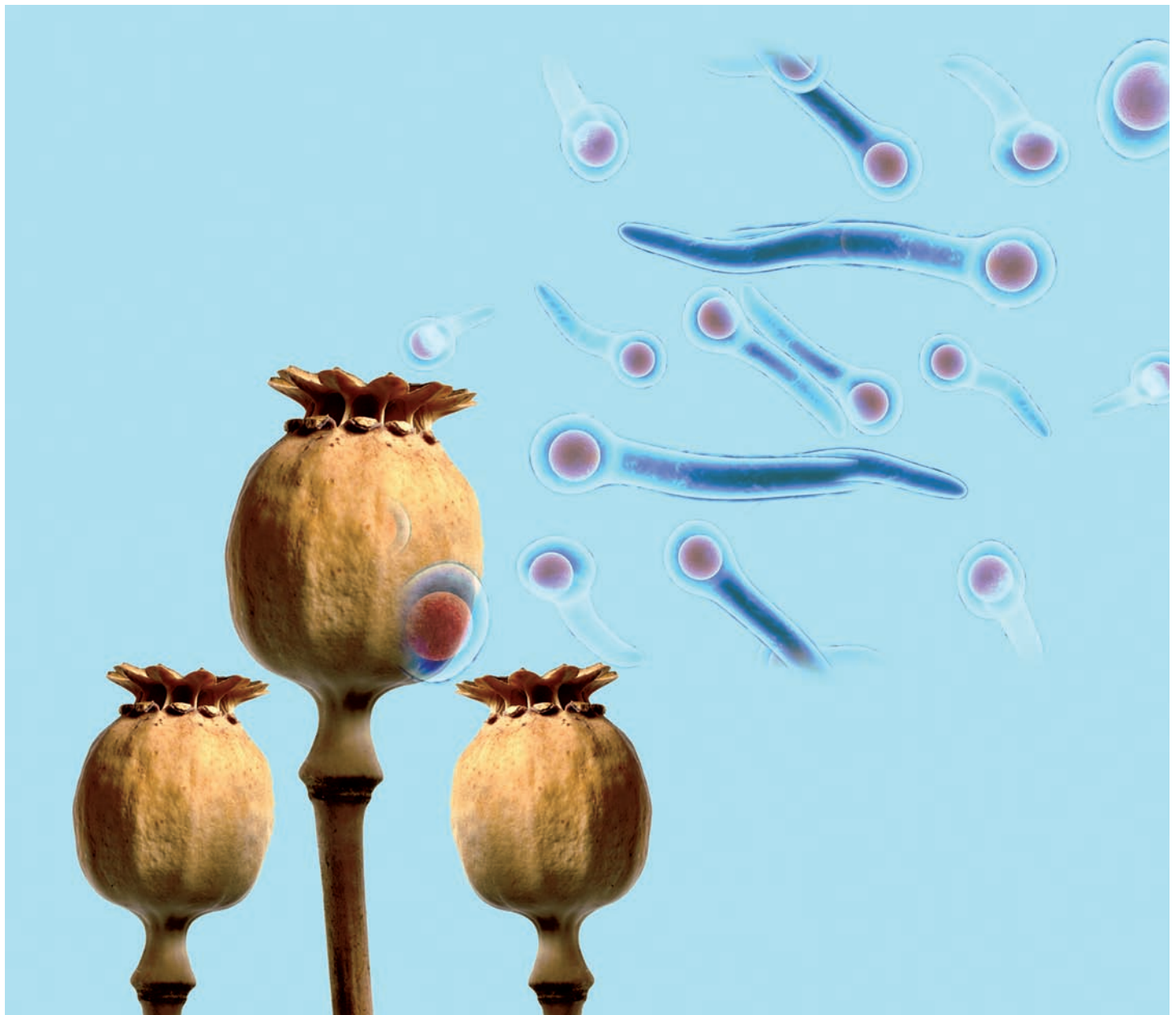


Shooting Up

Infections among injecting drug users in the United Kingdom 2008

An update: October 2009



GLOSSARY OF ABBREVIATIONS:

AIDS	Acquired Immunodeficiency Syndrome
anti-HBc	Antibodies to hepatitis B core antigen
anti-HCV	Antibodies to hepatitis C virus
anti-HIV	Antibodies to Human Immunodeficiency Virus
CA-MRSA	Community-associated methicillin resistant <i>Staphylococcus aureus</i>
CDSC	Communicable Disease Surveillance Centre
Cfi	Centre for Infections
CRDHB	Centre for Research on Drugs and Health Behaviour, London School of Hygiene & Tropical Medicine
DHSSPS	Department of Health, Social Services and Public Safety (Northern Ireland)
FSML	Food Safety Microbiology Laboratory
GAS	Group A Streptococcus
HIV	Human Immunodeficiency Virus
HPA	Health Protection Agency
HPS	Health Protection Scotland
HTLV	Human T-Cell Lymphotropic Virus
IDU	Injecting Drug User
ISD	Information and Statistics Division (Scotland)
MRSA	Methicillin resistant <i>Staphylococcus aureus</i>
MSSA	Methicillin sensitive <i>Staphylococcus aureus</i>
NEX	Needle Exchange
NHS	National Health Service
NPHS	National Public Health Services for Wales
NTA	National Treatment Agency for Substance Misuse
RSIL	Respiratory and Systemic Infection Laboratory
SRU	Staphylococcus Reference Unit
UAPMP	Unlinked Anonymous Prevalence Monitoring Programme
UK	United Kingdom

GLOSSARY OF TERMS:

COHORT STUDY
A study where a group of people is followed up over a period to time.

CURRENT IDU
An injector who had last injected during the preceding four weeks.

DIRECT SHARING
Where an injector reports passing on or receiving needles and syringes that have already been used.

DRUG CONSUMPTION ROOM (DCR)
A facility, with healthcare staff usually present, where users of street drugs can consume their drugs in a safe and hygienic environment.

FORMER IDU
An injector who has not last injected during the preceding four weeks.

HOMELESS
Someone living in a hostel, having no fixed abode, or living on the streets.

MIXING CONTAINERS
A container, such as a spoon, in which drugs are prepared for injection. Sometimes referred to as 'cookers', as drugs are often heated during preparation.

PREVALENCE
The proportion of a group, or population, which has been exposed to, or has an infection.

RECENT INITIATE
An injector who had injected for the first time during the preceding three calendar years.

Shooting Up

Infections among injecting drug users in the United Kingdom 2008
An Update: October 2009

Health Protection Agency, Centre for Infections

Health Protection Scotland

National Public Health Service for Wales

Communicable Disease Surveillance Centre Northern Ireland

& Centre for Research on Drugs & Health Behaviour, London School of Hygiene & Tropical Medicine

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PREFACE

This report uses data gathered by surveillance systems operated by the Health Protection Agency's Centre for Infections (CfI), Health Protection Scotland (HPS), National Public Health Service for Wales (NPHS), Communicable Disease Surveillance Centre (CDSC) Northern Ireland and other collaborating institutions. Data from research studies undertaken by these organisations, in collaboration with the Centre for Research on Drugs and Health Behaviour (CRDHB) at London School of Hygiene & Tropical Medicine, the School of Social Sciences at the University of West of Scotland, and the Centre for Drugs Misuse Research at the University of Glasgow, has also been included.

The report is intended to provide to public health practitioners and those commissioning and providing services to drug users, an overview of the current extent of key infectious diseases among those who inject illicit drugs.

The public health surveillance systems used to collect data on the infections considered in this report vary between the administrative areas of the United Kingdom. Whilst there is a United Kingdom wide system for HIV case reporting, the other data sources available do not provide data for the whole of the United Kingdom. Therefore much of the data presented here relates to parts of the United Kingdom, either to individual administrative areas (Northern Ireland, Wales, Scotland or England) or to combinations of these.

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Summary & Recommendations

Key Messages

1. Transmission of HIV and hepatitis C infection through injecting drug use remains higher than in the late 1990s. Overall, around two-fifths of injecting drug users are now infected with hepatitis C and about one in 73 with HIV.
2. Injecting site infections are common, with around one-third of injecting drug users reporting an abscess, sore, or open wound at an injecting site in the last year.
3. Injecting into the groin and the injection of crack cocaine, which are associated with higher levels of infection and risky injecting, have become more common.
4. Needle and syringe sharing has declined in recent years with around a fifth of injecting drug users continuing to share. The sharing of other injecting equipment is more common.
5. There has been a marked increase in the number of injecting drug users receiving the hepatitis B vaccine, with over two-thirds now reporting vaccination.
6. Services to reduce injecting-related harm and support for those who want to stop injecting should continue to be developed in line with published guidance.

Key Findings

Viral Infections

HIV:

- Evidence suggests that HIV transmission among injecting drug users (IDUs) has increased since 2002. In 2008, around one in 77 IDUs had become infected within three years of starting to inject - an increase from around one in 400 in 2002.
- In England & Wales outside London the HIV prevalence among current IDUs has increased from around one in 400 in 2002 to about one in 91 in 2008. In London the prevalence has changed little since the beginning of the decade, with around one in 20 HIV-infected in 2008. In Northern Ireland around one in 45 IDUs were infected in 2008, while the lowest prevalence of around one in 200 was found in Scotland. Combining these figures suggests that around one in 73 IDUs are HIV-infected in the United Kingdom (UK), which is low when compared to many other countries.
- One third of those IDUs with HIV remain unaware of their infection despite most IDUs in contact with services reporting ever having a voluntary confidential test.

Hepatitis C:

- Combining data from across the UK indicates that around two-fifths of IDUs have been infected with hepatitis C. However, there are marked variations in hepatitis C prevalence, from around a quarter infected in areas such as Wales and the North East of England, to around two-thirds infected in other areas, including London and Glasgow.
- Current levels of hepatitis C transmission remain higher than a decade ago, with a fifth of IDUs becoming infected within three years of starting to inject.
- Uptake of voluntary confidential testing for hepatitis C among IDUs in contact with drug services, after increasing markedly, may now be levelling off, with around three-quarters ever having had a test. Around half of IDUs with hepatitis C remain unaware of their infection and this proportion has not changed in recent years.

Hepatitis B:

- The transmission of hepatitis B continues among IDUs. However, this may have declined in recent years. Around one in six IDUs had been infected with hepatitis B in 2008.
- The proportion of IDUs reporting uptake of hepatitis B vaccination has increased over the last decade, with over two-thirds now reporting that they had accepted at least one vaccine dose.

Bacterial Infections

- Injecting site infections remain common, with around one-third of IDUs reporting an injection related abscess, sore, or open wound in the last year. These include problems ranging from localised injection site infections through to invasive disease associated with meticillin-resistant *Staphylococcus aureus* and severe group A streptococcal infection.
- The ongoing occurrence of wound botulism cases remains a concern, with four cases reported in 2008.

Behaviours

- Around a fifth of IDUs reported needle and syringe (direct) sharing during the previous month in 2008. Levels of direct sharing have declined in recent years, following an increase in the late 1990s. However, levels remain higher than before 1998, when about a sixth reported direct sharing. The sharing of other injecting equipment remains even more common, with over a third reporting this in 2008.
- Two practices associated with a greater risk of infection have become more common, with almost one in three IDUs now reporting injecting into the groin (femoral vein) and a third reporting the injection of crack-cocaine.

Recommendations

When commissioning community-based services to reduce the harm associated with problem drug use, in line with the national drug strategie^{3,4,5,6}, primary care bodies* and drug action teams, or local partnerships, should give priority to preventing the spread of infections among IDUs and reducing the harm that these infections cause. This should be through:

1. Continuing the development of high-quality needle-exchange (NEX) services for those unable to stop injecting (including those using drug treatment services), in line with the recent National Institute for Health and Clinical Excellence (NICE) guidance⁷ and the Scottish National *Guidelines for Services Providing Injection Equipment*⁸. This will include:
 - a) Ensuring sufficient distribution of injecting equipment to prevent the sharing of needles and syringes.
 - b) Providing appropriate injecting-related equipment, other than needles and syringes, to support hygienic injecting practice.
 - c) Ensuring an appropriate range of services are provided, including provision by drug services, retail pharmacies and mobile or outreach services.
 - d) Providing services which are easily accessible throughout the week (including in the evenings, at weekends and on public holidays).

- e) Provision of interventions that support entry into drug treatment, particularly to sustained quality substitute opioid treatment for heroin users, which has been shown to protect against infections.
2. Developing drug treatment services in line with ‘*Drug Misuse and Dependence: UK Guidelines for Clinical Management*’⁹ and the NICE guidance^{10,11}. To provide a range of easily-accessible drug treatment and support services that encourage drug users to reduce and cease injecting, and reduce or stop their drug use.
 3. Ensuring that all services working with IDUs (including drug treatment services, general practitioners and NEX), provide easy access to:
 - a) Information and practical advice on safer injecting practices, avoiding injecting site infections, prevention of blood-borne virus transmission and the safe disposal of used equipment.
 - b) Hepatitis B vaccination services, with follow-up strategies for those who have started the vaccination course, in line with national service specifications¹².
 - c) Tetanus vaccine and boosters to those IDUs who may need them and hepatitis A vaccination, where appropriate¹³.
 - d) Diagnostic tests for hepatitis C and HIV, and referral pathways for those infected to specialist assessment and treatment, in line with relevant strategies¹⁴ and action plans^{15, 16, 17, 18}.
 - e) Health checks and treatment for injection site infections.
 - f) Interventions to encourage safer injection practice and to decrease or stop injecting.

The planning of services for drug users should be based on local needs’ assessments, informed by local estimates of numbers of drug users and IDUs, estimates of the prevalence of infection among these populations, and the particular needs of discrete groups, such as homeless IDUs¹⁹. This should include developing mechanisms with local service providers, to ensure that services respond in a timely fashion to evolving patterns of drug use.

In England, service development should be guided by the Healthcare Commission and National Treatment Agency for Substance Misuses (NTA) joint review on *Harm Reduction*²⁰; *Models of Care*²¹, *Treatment Outcomes Profile*²², *Action Plan for Reducing Drug Related Harm in England*²³ and the NTA’s *Good Practice in Harm Reduction report*²⁴. In Scotland there are National Quality Standards for substance misuse services²⁵.

* Primary Care Trust in England, Community Health Partnerships and NHS Boards in Scotland, Local Health Boards in Wales, and Health and Social Services Boards supported by Local Health and Social Care Groups in Northern Ireland.

Introduction

1. Injecting drug users (IDUs) are vulnerable to a wide range of infections, including those caused by viruses, such as HIV and hepatitis C, and by bacteria, such as *Clostridium botulinum* and group A streptococci. These infections can result in high levels of illness and death, so public health surveillance of infectious diseases and associated risk and protective behaviours among this group are important.
2. The extent of injecting drug use in the United Kingdom (UK) remains uncertain. A recent national estimate for England suggested around 117,000 injectors of heroin or crack-cocaine in 2006 (0.34% of those aged 15 to 64), down from 137,000 in 2004^{26, 27}. A pilot back-calculation model in 2000 suggested that there may have been between 100,000 and 150,000 current opiate-using IDUs (0.5% to 0.7% of those aged 15 to 44)²⁸. However, other studies have suggested that the total number of IDUs in England may be much higher²⁹, with one estimate suggesting as many as 217,000 in England and Wales³⁰. Two studies funded by the Scottish Government have provided estimates of the prevalence of problem drug misuse in Scotland; these indicated that the number of current injectors in Scotland may have reduced from around 25,000 in 2000^{31, 32} to 19,000 in 2003³³ (representing 0.9% and 0.7% of those aged 15 to 54 years, respectively). There are no recent published studies of estimates for Wales or Northern Ireland. Indicators of IDU prevalence suggest an increase over the long term³⁴.
3. In 2008, the second ten-year drug strategy '*Drugs: protecting families and communities*³ was launched. It followed on from the previous strategy, which was launched in 1998³⁶ and updated in 2002³⁵. The strategy reflects the devolution of powers within the UK. Scotland⁶, Wales⁴ and Northern Ireland⁵ have thus adopted country-specific strategies. The Scottish Government published a new drugs strategy in 2008, which focuses on recovery from problem drug use⁶. There have also been a number of initiatives since 1998, such as the establishment of the National Treatment Agency for Substance Misuses (NTA) and publication of the Models of Care²¹ guidance in England, to support the development of drug treatment systems to meet the treatment aims of the strategy.
4. The provision of services to IDUs is addressed in a number of national action plans and there are also various guidance documents. The action plans include: the Hepatitis C Action Plan for England launched in 2004; in Scotland a Hepatitis C Action Plan¹⁶ was initiated in 2006, and its second phase launched in May 2008¹⁷; an Action Plan for the Prevention, Management and Control of Hepatitis C in Northern Ireland was launched in 2007¹⁸ and, in Wales, a consultation on a proposed blood-borne viral hepatitis action plan was held in the summer of 2009³⁷. In 2007, the Department of Health, with the NTA, launched an action plan for reducing drug-related harm in England, which includes infections as one of its focuses. Following on from this action plan, a good practice guide has been issued²⁴ and the 'Harm Reduction Works' information campaign was launched³⁸. Recent guidance documents include the National Institute for Health and Clinical Excellence (NICE) guidelines relating to the appropriate provision of methadone and buprenorphine³⁹, opiod detoxification¹¹, psychosocial interventions¹⁰, and the optimal provision of needle-exchange (NEX) schemes⁷. The Department of Health and the devolved administrations have produced Drug Misuse and Dependence UK Guidelines for Clinical Management⁹.
5. This report presents available data on the extent and trends over time of infections among IDUs in the UK up to the end of 2008. It includes data on the more severe bacterial infections affecting IDUs, on available markers of HIV and viral hepatitis prevalence and incidence, and on associated risk and protective behaviours.

Viral Infections

6. IDUs are vulnerable to a range of viral infections through the use and sharing of contaminated injecting equipment. Some of these infections, such as hepatitis C and HIV, cause long-term chronic illnesses with asymptomatic phases that can last many years.

HIV

7. Transmission of HIV through injecting drug use was recognised early in the HIV epidemic at the beginning of the 1980s. Explosive outbreaks of HIV infection among IDUs have occurred worldwide, with ongoing transmission in Eastern Europe. Other than an outbreak in Edinburgh in the early 1980s, HIV infection among IDUs has remained relatively uncommon in the UK, probably as a result of prompt community and public health responses.
8. By the end of 2008 there had been a cumulative total of 5,023 HIV diagnoses reported^a in the UK where infection was thought to have been acquired through injecting drug use. These accounted for 4.9% of all HIV diagnoses to the end of 2008 (102,729) in the UK, 3.9% (3,692 of 95,137) of those in England, 24% (1,263 of 5,302) in Scotland^b, 3.4% (55 of 1,615) in Wales and 2.1% (13 of 631) in Northern Ireland.
9. The annual number of HIV diagnoses among IDUs in recent years has been low and relatively stable (table 1), at an annual average of 151 reports during the period 1999 to 2008. So far, 152 HIV diagnoses, where infection was thought to have been acquired through injecting drug use, have been reported in the UK for 2008 (48 in London, 15 in Scotland and 89 elsewhere). The probable country of infection was reported for 61% (93) of these diagnoses. Where reported, 63% (59) of infections were probably acquired within the UK and 37% (34) outside the UK, mostly in Southern and Eastern Europe. By comparison, in 2007 49% (49 of 100) of infections were probably acquired in the UK. In 2008, country of birth was reported for 61% (93) of the diagnoses; 49% (46) were born within the UK and 51% (47) outside the UK, mostly in Southern Europe. In 2007 the proportion born within the UK was 40% (40 of 100).
10. The number of HIV-infected IDUs seen for HIV-related treatment or care in England, Wales and Northern Ireland has increased year-on-year during the past decade. In 2008, 1,112 diagnosed HIV-infected IDUs were seen for care, an increase of 23% since 2000, when 903 diagnosed HIV-infected IDUs were seen for care. IDUs accounted for only 2.0% (1,112 of 55,326) of all HIV-infected adults (aged over 15 years) seen for care in 2008. This proportion has gradually fallen from 4.5% in 2000 (903 of 20,066). In 2008, 71% (788 of 1,112) IDUs were male and 85% (941 of 1,105) were white. Almost one quarter of IDUs seen for HIV-related care in 2008 had at some time been diagnosed with an AIDS-defining illness (259 of 1,099). While 24% (266 of 1,107) of IDUs were not receiving antiretroviral therapy in 2008, the majority were, with 56% (615) on a combination of three drugs and 17% (187) were receiving four or more drugs (only 39 individuals were receiving mono- or dual-drug combinations). Of the IDUs seen for HIV-related care in 2008, around 16% (162 of 999) had latest CD4 counts of 200 cells per mm³ or less^c - the level at which it is recommended to start antiretroviral therapy¹⁰. In 2008, the proportion of IDUs with CD4 counts at or under 200 cells per mm³ who were not on treatment was 16% (26 of 162).
11. In Scotland, 362 HIV-infected IDUs were seen for HIV-related treatment or care in 2008, a 13% decrease since 2000 when 418 IDUs were seen for care. IDUs accounted for 32% (418 of 1,313) and 13% (362 of 2,778) of all HIV-infected individuals seen for care in 2000 and 2008 respectively, where the route of infection was known. In 2008, 63% (229 of 362) IDUs were male and 98% (350 of 357) were white, and 17% of IDUs seen for HIV-related care in 2008 had at some time been diagnosed with an AIDS-defining illness (60 of 362). While 8.3% (30 of 362) of IDUs were not receiving antiretroviral therapy in 2008, the majority were, with 54% (196) on a combination of three drugs and 37% (133) were receiving four or more drugs (only three individuals were receiving mono- or dual-drug combinations). Of the IDUs seen for HIV-related care in 2008 19% (70 of 362) had latest CD4 counts of 200 cells per mm³ or less.
12. The overall HIV prevalence seen among IDUs in 2008 was similar to that seen in recent years. Among those participating in the Unlinked Anonymous Prevalence Monitoring Programme's (UAPMP) survey of current and former IDUs in England, Wales and Northern Ireland, the overall prevalence of antibodies to HIV was 1.6% (51 of 3,209) in 2008 (Figure 1). In London, the prevalence was 3.8% (21 of 546) while elsewhere in England it was 1.0% (23 of 2,347). Combining data for 2007 and 2008 the prevalence of HIV infection among IDUs in the UAPMP survey in Northern Ireland was 2.2% (7 of 317) and, in Wales, was 0.8% (4 of 494).
13. The HIV prevalence among recent initiates (those who reported first injecting during the previous three years), a measure of recent transmission, indicates raised levels of HIV transmission among IDUs in recent years (Figure 2). The prevalence among the recent initiates participating in the UAPMP survey has remained higher than it was prior to 2003, with the prevalence being 1.3% (5 of 391) in 2008 (in 2002 it was 0.25%, 1 of 400). This indication of increased HIV transmission since 2002 is corroborated by the findings of a community-recruited cohort study of recently initiated IDUs undertaken in London during 2001-03.

^aBased on reports received at the Centre for Infections by the end of June 2009.

^bThe high overall proportion of IDUs among the diagnosed HIV infections in Scotland reflects individuals who were infected and diagnosed early in the epidemic. Since 2002 IDUs have accounted for around only one in twenty of new HIV diagnoses in Scotland.

^cIndividuals with CD4 cell counts of 200 cells per mm³ or less have an increased risk of morbidity and mortality relative to individuals with higher counts. Individuals diagnosed with low CD4 counts have a poorer response to therapy and will have missed opportunities to prevent onward transmission through clinical and behavioural preventive measures.

This estimated that HIV incidence was 3.4% per annum⁴¹ overall and provided evidence that the incidence of HIV was higher among those who reported injecting crack-cocaine (around 6%). However, the recent cohort study of IDUs in South Wales undertaken by the National Public Health Service (NPHS) found that all of the 400 IDUs who were followed up after approximately one year were negative for antibodies to HIV⁴⁴.

14. Current IDUs, those who have injected drugs in the last four weeks, are an important group, as they will have been at recent risk through injecting drug use. The HIV prevalence among those who reported injecting in the four weeks prior to taking part in the UAPMP survey has been raised in recent years⁴². In 2008 the overall prevalence among current IDUs in England and Wales was 1.6% (30 of 1,844). In London the HIV prevalence among this group has changed little since 2000 and was 5.0% (12 of 240) in 2008. However, the HIV prevalence among current IDUs in England and Wales outside London has increased; it was 0.25% (3 of 1,206) in 2003 and had changed little over the previous five years. It then increased to 0.66% (8 of 1,213) in 2004. Prevalence among this group has remained elevated since then: 1.6% (24 of 1,510) in 2005, 0.66% (11 of 1,660) in 2006, 0.63% (12 of 1,894) in 2007 and 1.1% (18 of 1,604) in 2008.
15. In 2008, 28% of IDUs (863 of 3,087) who took part in the UAPMP agency survey reported *never* having had a voluntary confidential test for HIV. This is the lowest level ever recorded in this survey (Figure 3). This reflects an increase in the uptake of testing in recent years as,

before 2003, uptake had changed little since the survey started in 1990, with 42% (1,126 of 2,651) reporting never having had a test in 2002. Of those who had antibodies to HIV, 64% (28 of 44) were aware of their infection in 2008, similar to the level seen in the previous two years, but higher than in 2005 (47%, 22 of 47).

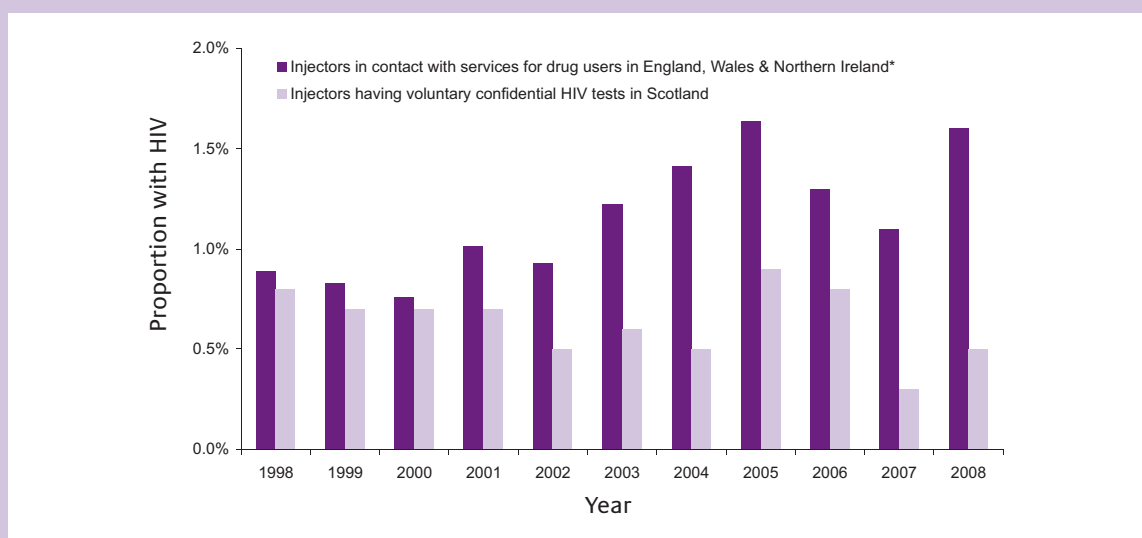
16. In Scotland, the prevalence of HIV among IDUs is monitored through the surveillance of people undergoing voluntary confidential HIV testing. This found an HIV prevalence of 0.5% (13 of 2,381) among IDUs undergoing testing in Scotland during 2008; this compares with a prevalence of 1.4% to 3.2% in the early to mid-1990s and 0.3% to 0.9% during the period 1998 to 2007 (Figure 1). Among 633 IDUs surveyed at needle exchanges in three Scottish Health Boards during 2007, only one respondent (0.2%) tested positive for HIV antibodies.⁷⁸

Hepatitis C

17. Hepatitis C is currently the most important infectious disease affecting those who inject drugs. Very high prevalence has been reported among IDUs in many countries. Up to 80% of those acquiring hepatitis C develop chronic infection and are at risk of developing cirrhosis and liver cancer. The development of more effective antiviral therapies means that the uptake of diagnostic testing for hepatitis C by current and former IDUs is increasingly important. Countries within the UK have developed strategies to respond to hepatitis C^{15, 16, 17, 18} and much of the focus of these is on current and former IDUs.

Figure 1:

The prevalence of HIV infection among current and former injecting drug users: 1998 to 2008



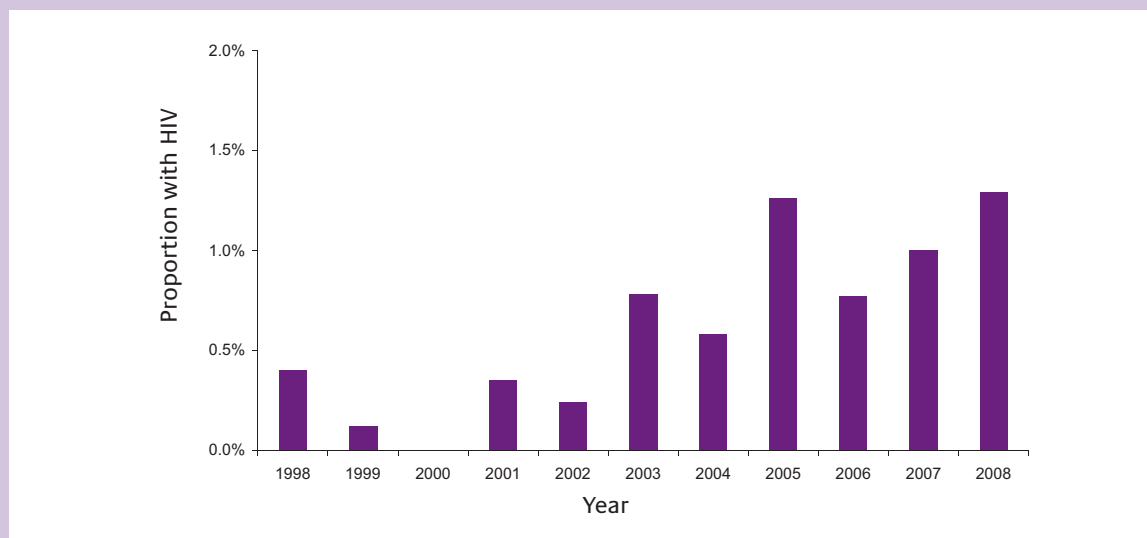
* Data from Unlinked Anonymous Prevalence Monitoring Programme survey of injectors in contact with drug agencies. Includes Northern Ireland from 2002.

Hepatitis C: England, Wales and northern Ireland

18. Up to the end of 2008, laboratories in England had reported a total of 69,864 diagnoses of hepatitis C infections to the Centre for Infections (Cfi), since reporting began in 1992. The majority of these infections will most probably have been acquired through injecting drug use, as over 90% of those diagnoses with risk factor information gave this as the route of infection (Table 1). The number of laboratory reports each year has been increasing since the introduction of diagnostic tests in the early 1990s, from under 1,000 per annum before 1995 to over 6,000 per annum since 2004, with 8,190 reported in 2008. As acute hepatitis C is usually asymptomatic, this rise probably reflects the increasing number of those at risk being tested, rather than an increase in incidence.
19. Laboratories in Wales have reported a total of 4,047 diagnoses of hepatitis C infection, including 266 diagnoses in 2008. Over 90% of infections in individuals with a known risk factor were associated with injecting drug use. In Northern Ireland, laboratories have reported a total of 1,291 diagnoses of hepatitis C infection. In 2008 there were 132 new diagnoses reported in Northern Ireland, and, of those reports with exposure data, 88% were associated with injecting drug use.
20. The prevalence of hepatitis C infection among IDUs remains high, overall. Of the current and former IDUs participating in the UAPMP survey, 40% (1,274 of 3,209) had antibodies to hepatitis C^d in 2008, similar to that in 2007 (39%, 1,412 of 3,580) (Table 1). The overall hepatitis C prevalence in England was 41% (1,177 of 2,893). However, there were very marked regional variations (Figure 4); from 21% (117 of 553) in the North East to 56% (641 of 1,140) in London and 58% (534 of 916) in the North West (data from 2007 and 2008 combined). The prevalence in Wales and Northern Ireland (Figure 4) was lower than in many of the English regions: hepatitis C prevalence was 24% (120 of 494) in Wales and 31% (97 of 317) in Northern Ireland (data from 2007 and 2008 combined).
21. Testing for hepatitis C was added to the UAPMP survey in 1998. Retrospective testing of the stored samples from 1992, 1994 and 1996 found hepatitis C prevalence^e that was higher among the current and former IDUs who participated in the survey in 1992 and 1996 (Table 1). A recently-published trend analysis examining the survey data from 1992 to 2006 found that the overall hepatitis C prevalence among current IDUs in England and Wales decreased markedly between 1992 and 1998, before rising gradually year on year up to 2006⁴³.
22. Among the current IDUs participating in the UAPMP survey throughout England, Wales and Northern Ireland, the prevalence of antibodies to hepatitis C has increased since the beginning of the decade, from 34% in 2000 (791 of 2,364) to 40% (758 of 1,891) in 2008 (Figure 5). There was a higher prevalence of hepatitis C infection among several sub-groups of current IDUs. In 2008, 54% (343 of 640) of those who reported

Figure 2:

The prevalence of HIV infection among recently* initiated injecting drug users England, Wales & Northern Ireland[^]: 1998 to 2008



* Those who started injecting drugs during the three years prior to participating in the survey.

[^] Includes Northern Ireland from 2002.

Data from Unlinked Anonymous Prevalence Monitoring Programme survey of injectors in contact with drug agencies.

^d The sensitivity of the oral fluid test used in the UAPMP agency survey is approximately 92%.

^e Samples prior to 1998 were collected with a different oral fluid collection device. Hepatitis C test on samples collected using this older device has sensitivity of approximately 74%.

injecting crack-cocaine during the past four weeks had hepatitis C, compared to 33% (415 of 1,251) of those who had not, and 48% (96 of 199) of those who reported injecting cocaine had hepatitis C, compared with 39% (662 of 1,692) of those who had not. Higher hepatitis C prevalence was also associated with having used certain injection sites: 48% (280 of 579) of those who had injected into their groin had hepatitis C, compared with 36% (478 of 1,312) of those who had not, as did 46% (146 of 321) of those who had injected into their legs, compared with 39% (612 of 1,570) those who had not. Those who had ever been homeless were also more likely to have antibodies to hepatitis C (42%, 582 of 1,378) than those who had not (34%, 143 of 418).

23. The prevalence of hepatitis C in recent initiates, a measure of recent transmission, is one of the national outcome indicators for the Hepatitis C Action Plan for England¹⁵. In 2008, among those in this group who participated in the UAPMP survey throughout England, Wales and Northern Ireland, the prevalence was 22% (87 of 391), similar to that between 2001 and 2007. However, the prevalence among this group remains higher than it was in 2000 (11%, 89 of 787) and earlier years (Figure 6)¹. An increase in the level of hepatitis C transmission in the early part of this decade is supported by the findings of the cohort study undertaken in London, which estimated the annual incidence to be 42 per 100 person-years⁴¹. However, a recent cohort study in south Wales estimated hepatitis C incidence was 5.9 per 100 person-years⁴⁴.

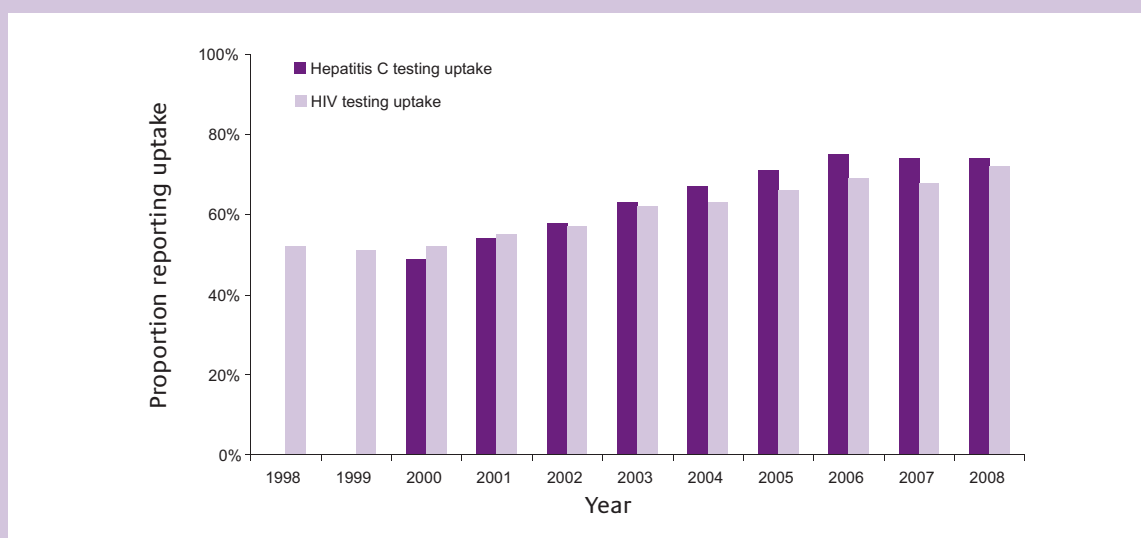
24. An increasing proportion of IDUs with hepatitis C are aware of their infection (Table 1), indicating progress with one of the aims of the ‘Hepatitis C Action Plan for England’¹⁵. Most IDUs who took part in the UAPMP survey in England now report having accepted the offer of a test for hepatitis C. In 2008 only 23% of IDUs (643, of 2,757) reporting never having had a voluntary confidential test for hepatitis C, compared to 51% (1,532 of 2,998) in 2000. Of those IDUs in England who were infected with hepatitis C, 51% (523 of 1,029) were unaware of their infection in 2008, similar to the level seen since 2004, but lower than the 60% (615 of 1,018) found in 2000. Of participants from Wales, 35% (159 of 456) reported never having a voluntary confidential test for hepatitis C in 2007/08, with almost two-thirds (61 of 99) of those with hepatitis C being unaware of their infection. Less than one in ten (7.6%, 23 of 302) of the participants from Northern Ireland in 2007/08 reported not having been tested for hepatitis C, and almost a third (27 of 85) of the participating IDUs with hepatitis C in the province were unaware of their hepatitis C infection.

Hepatitis C: Scotland

25. During 2006, it was estimated that approximately 50,000 people were infected with hepatitis C in Scotland (representing 1% of the population)¹⁷. Of these 50,000, it was estimated that 38,000 (76%) were chronically infected (including 34,300 individuals who had ever injected drugs) and that less than 40% of these had their infection diagnosed. It was estimated that only 20% of the 38,000 chronically-infected

Figure 3:

Voluntary confidential testing for HIV and hepatitis C* among current & former injectors in England, Wales & Northern Ireland[^]: 1999 to 2008



* Collection of data on hepatitis C voluntary confidential testing began in 2000.

[^] Includes Northern Ireland from 2002.

Data Source: Unlinked Anonymous Prevalence Monitoring Programme survey of injectors in contact with drug agencies.

¹Data on the prevalence amongst this group for England only will be given in: ‘Hepatitis C in UK: Annual Report 2009’. The prevalence and trend are very similar to that for England, Wales, and Northern Ireland combined.

individuals had ever been in specialist care and only 5% had received a course of antiviral therapy¹⁷. While an estimated 2,100 hepatitis C infected persons were living with cirrhosis, and 1,000 to 1,500 IDUs were becoming infected annually⁴⁵.

26. By the end of 2008, a total of 25,355 people had been diagnosed hepatitis C positive in Scotland. Among the 16,638 reports for which risk information was available, 14,803 (89%) were known to have ever injected drugs. In 2008, 1,720 new diagnoses were reported; this compares with an annual average of 1,601 reports during the period 2003 to 2007 (Table 1).

27. In Scotland, residual sera from specimens provided by IDUs, originally tested for HIV, are anonymously tested for hepatitis C, to monitor trends in hepatitis C prevalence among this group⁴⁶. Table 1 shows that the prevalence of hepatitis C among IDUs in Glasgow reduced substantially between 1990 (all IDUs: 89%; IDUs aged under 25 years: 91%) and 1999/2000 (62% and 41%, respectively), suggesting that there had been a decrease in hepatitis C incidence during the 1990s. Since then, no further reductions in the prevalence of hepatitis C were observed among all IDUs in Glasgow (67%, 72% and 63% in 2006, 2007 and 2008, respectively). Among IDUs aged under 25 years, the prevalence of hepatitis C has remained relatively stable between 1999/2000 (41% among 181 IDUs) and 2006-2008 (41% among 117 IDUs).

28. A review of epidemiological studies showed that the incidence of hepatitis C among IDUs in many parts of

Scotland remains high (in the range 12 to 29 per 100 person-years)⁴⁷.

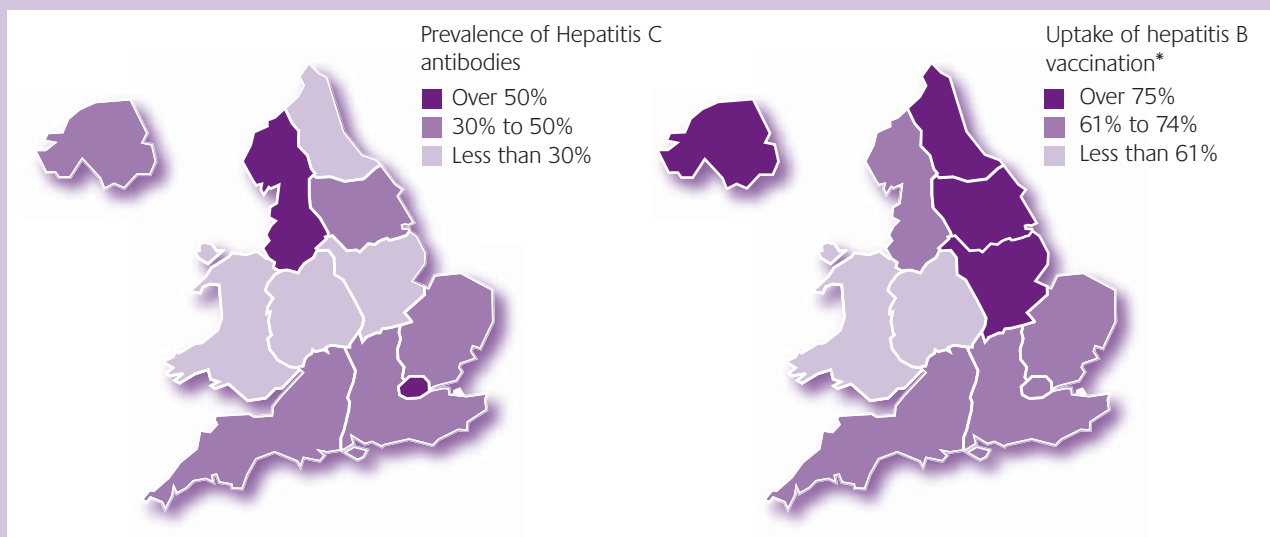
29. In 2007, the estimated sero-prevalence of hepatitis C was 74% among 358 IDUs surveyed at needle exchanges in Glasgow⁷⁸, similar to the estimated sero-prevalence of 71% found among 435 Glasgow IDUs recruited from needle exchanges in 2005. Among 57 current Glasgow IDUs surveyed in 2007 who had commenced injecting in the previous five years, the sero-prevalence of hepatitis C was 57%; this compares to a sero-prevalence of 50% among 81 equivalent IDUs surveyed in 2005.

30. Among IDUs surveyed at needle exchanges in three Scottish Health Boards during 2007 as part of the Needle Exchange Surveillance Initiative, a large proportion (56% of 357) of respondents who were hepatitis C antibody-positive in saliva had not been previously diagnosed (that is, they had either never been tested, had not received their test result, or reported their status as hepatitis C negative)⁷⁸.

31. A study modelled hepatitis C virus transmission through the sharing of used needles/syringes among IDUs in Glasgow. This combined available information on the incidence and cessation of injecting drug use, the frequencies with which IDUs injected and shared needles/syringes, and the susceptibility, transmissibility and carriage of hepatitis C infection. Scenario analyses indicated that as many as 4,500 hepatitis C infections had potentially been prevented in Glasgow during 1988-2000 as a result of harm-reduction measures⁴⁸.

Figure 4:

Geographic variations in the prevalence of antibodies to hepatitis C and the uptake* of hepatitis B vaccine among current & former injecting drug users in England, Wales & Northern Ireland (2007 and 2008 data combined).



* Self reports, those receiving one or more vaccine doses.

Data Source: Unlinked Anonymous Prevalence Monitoring Programme survey of injectors in contact with drug agencies. The sensitivity of the test used for antibodies to hepatitis C is approximately 92%. Further regional data from this survey are available at:

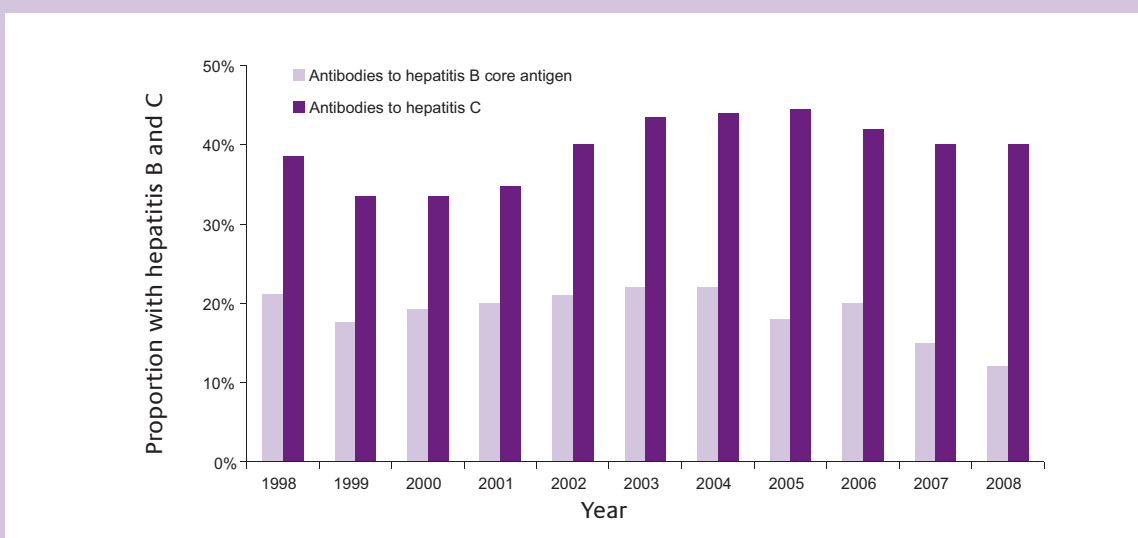
www.hpa.org.uk/webw/HPAweb&Page&HPAwebAutoListDate/Page/1201094588821?p=1201094588821

Hepatitis B

32. In the UK, hepatitis B infection is usually acquired in adulthood, with sexual activity or injecting drug use being the most commonly reported routes of infection. Infection with the hepatitis B virus typically causes an acute infection, with a small number of those infected going on to develop chronic disease. Infection with hepatitis B is, however, preventable, using a safe and effective vaccine.
33. In England and Wales, acute hepatitis B cases are reported to the CfI. There was a substantial deterioration in the quality of hepatitis B reporting in 2004 and data for 2004 to 2007 is unavailable⁹. However, in 2003 injecting drug use was the main identified risk associated with hepatitis B infection, accounting for 34% of individuals with a known risk factor in England, and 27% in Wales. Through the implementation by the Health Protection Agency (HPA) of national standards for the surveillance of hepatitis B and C in England⁴⁹, cases of acute hepatitis B are now reported nationally from local health protection units. In 2008, a total of 479 cases, classified as acute or probable acute infections, were reported from the units; an additional 141 cases were reported as acute infections from laboratories. Of these 620 cases, 242 (39%) had associated exposure information and only 25 (10%) of these were injecting drug users. Further analysis suggests that around 10% of these reported cases may be mis-classified as acute infections, but the findings are consistent, with a decline in hepatitis B incidence since 2003.
34. In Scotland and Northern Ireland, reported hepatitis B diagnoses encompass both acute and chronic infections. In Scotland, there were 615 reports in 2008; this compares to an average annual total of 381 for the period 2003 to 2007. The recent increase in reports probably reflects a rise in chronic cases being clinically recognised. The proportion of case reports indicating injecting drug use as the main risk declined from 30% in 1999 – the year in which an outbreak occurred among the IDU population in Aberdeen – to less than 1% in 2008 (Table 1); however, risk factor information is rarely provided. In Northern Ireland, the total number of reports of hepatitis B infection prior to 2002 had fluctuated at around 30 reports each year. There were around 65 reports each year between 2002 and 2005, rising to 76 in 2006, 104 in 2007 and 101 in 2008. Some of these infections will have been related to injecting drug use.
35. Overall in the UK, about one in six IDUs has had hepatitis B infection. In 2008, 13% (425 of 3,207) of the current and former IDUs who took part in the UAPMP survey in England, Wales and Northern Ireland had antibodies to hepatitis B core antigen (anti-HBc, a marker of previous or current hepatitis B infection)^b; this was lower than the level that had been seen since 1995 (Table 1). The prevalence varied by country (combining 2007 and 2008 data); in Wales, the prevalence was 9.1% (45 of 494) and in Northern Ireland, 5.7% (18 of 316).
36. The transmission of hepatitis B continues, even though there is an effective vaccine. The prevalence of anti-HBc among recent initiates most probably reflects recent

Figure 5:

Past hepatitis B and C infection among current injecting drug users* England, Wales & Northern Ireland[^]:1998 to 2008



* Those who injected drugs during the four weeks prior to participating in the survey.

[^] Includes Northern Ireland from 2002.

Data Source: Unlinked Anonymous Prevalence Monitoring Programme survey of injectors in contact with drug agencies. The sensitivity of the oral fluid test for antibodies to hepatitis B core antigen up to 2006 was approximately 75%. Due to changes in available laboratory consumables a revised test was introduced in 2007 the sensitivity of which is still being confirmed. The sensitivity of the test used for antibodies to hepatitis C is approximately 92%.

transmission through injecting drug use. The UAPMP survey found that prevalence among this group had increased from 3.4% (20 of 583) in 1997 to 10% (40 of 388) in 2006. The prevalence among this group was 2.3% (9 of 391)^h in 2008 (Figure 6).

Hepatitis A

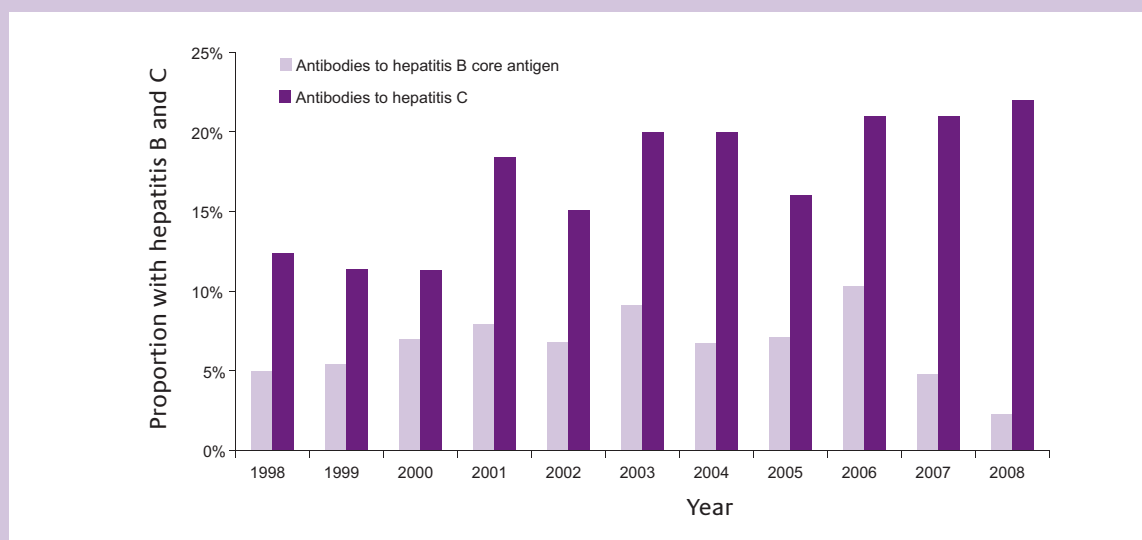
37. Up to the end of the 1990s, hepatitis A infection in the UK occurred most frequently in men who have sex with men and people who visit endemic countries. There is an effective vaccine that is offered to those at risk¹³. There appears to have been a change in the epidemiology of hepatitis A in the early part of the current decade. Significant numbers of infections occurred in IDUs who may have acquired hepatitis A infection through person-to-person contact, either through poor hygiene, via blood through sharing contaminated injected equipment, through sexual activities that increase the risk of oro-faecal contamination, or from drugs contaminated with faeces during smuggling. Hepatitis A vaccine is recommended for IDUs and can be given at the same time as hepatitis B vaccine. The objective of pre-exposure hepatitis A immunisation is to provide two doses of the hepatitis A vaccine at appropriate intervals to all individuals at high risk of infection.
38. In 2008, the total number of laboratory reports of hepatitis A infection in England and Wales reported to the HPA was 352 (all routes of infection). This continues the recent downward trend in the overall number of hepatitis A cases reported annually since 2002 (a total

of 1,357 reports). There were 359 laboratory reports of hepatitis A in 2007, 400 in 2006, 485 in 2005 and 671 in 2004. This downward trend continues in all age groups and is most notable in men aged between 15 to 44 years. Over the years, there have been an increasing proportion of hepatitis A reports containing no information on risk factors. This is reflected in the fact that in 2007 and 2008, less than 1% of reports had information on a recent history of travelling abroad being associated with hepatitis A acquisition. In the early part of the decade there had been a number of outbreaks of hepatitis A that were associated with injecting drug use and homelessness. Data since 2002 suggests that the outbreaks of hepatitis A in IDUs have been waning⁵⁰. Continued use of hepatitis A vaccine in the pre-exposure setting will assist in controlling hepatitis A in those who inject drugs.

39. An outbreak of hepatitis A infection among IDUs in Scotland occurred in Aberdeen during 2000 and 2001, and involved 74 IDUs. A case-control study revealed that poor hygiene, related to individuals preparing and injecting drugs together, had provided an opportunity for transmission⁵¹. From June to December 2003, there was an increase in the number of notifications of hepatitis A in Ayrshire, Scotland; 13 were reported cases among IDUs⁵².

Figure 6:

Past hepatitis B and C infection among recently initiated injecting drug users* in England, Wales & Northern Ireland[^]: 1998 to 2008



* Those who started injecting drugs during the three years prior to participating in the survey.

[^] Includes Northern Ireland from 2002.

Data Source: Unlinked Anonymous Prevalence Monitoring Programme survey of injectors in contact with drug agencies. The sensitivity of the oral fluid test for antibodies to hepatitis B core antigen up to 2006 was approximately 75%. Due to changes in available laboratory consumables a revised test was introduced in 2007 the sensitivity of which is still being confirmed. The sensitivity of the test used for antibodies to hepatitis C is approximately 92%.

Table 1

Summary of indicators of viral hepatitis and HIV transmission among Injecting Drug Users in the United Kingdom

Indicator	Area	Sub-Category	1990	1991	1992	1993	
Hepatitis C infection							
Reported laboratory diagnoses of hepatitis C infection	England	Total number of reports: All exposures	n	-	-	228	410
		Proportion of all reports, with exposure data, indicating injecting drug use [#]	%	-	-	53	66
	Wales	Total number of reports: All exposures	n	-	-	13	25
		Proportion of all reports, with exposure data, indicating injecting drug use [#]	%	-	-	13	100
	Scotland	Total number of reports: All exposures	n	36	276	375	528
		Proportion of all reports, with exposure data, indicating injecting drug use [#]	%	50	31	57	84
	Northern Ireland	Total number of reports: all exposures	n	1	13	48	7
		Proportion of all reports, with exposure data, indicating injecting drug use [#]	%	0	9	3	50
Proportion hepatitis C antibody positive ^{‡~}	England, Wales & Northern Ireland [^]	Current & former injectors	%	-	-	-	-
		First injected during the last 3 years	%	-	-	-	-
Prevalence hepatitis C among those having voluntary confidential HIV tests	Glasgow	Injectors: All ages	%	89	-	-	-
		Injectors: Age under 25 years	%	91	-	-	-
Hepatitis B infection							
Reported laboratory diagnoses of hepatitis B infection	England [‡]	Total number of reports: All exposures	n	599	555	512	605
		Proportion of all reports, with exposure data, indicating injecting drug use [#]	%	26	21	20	25
	Wales [‡]	Total number of reports: All exposures	n	19	17	19	24
		Proportion of all reports, with exposure data, indicating injecting drug use [#]	%	13	11	30	13
	Scotland ^{**}	Total number of reports: All exposures	n	249	200	120	186
		Proportion of all reports, with exposure data, indicating injecting drug use [#]	%	22	25	18	9
	Northern Ireland ^{***}	Total number of reports: All exposures	n	37	28	34	22
		Proportion of all reports, with exposure data, indicating injecting drug use [#]	%	33	31	35	34
Proportion hepatitis B antibody positive ^{‡~}	England, Wales & Northern Ireland [^]	Current & former injectors	%	33	31	35	34
		First injected during the last 3 years	%	21	7	16	13
HIV infection							
Reports of new diagnoses of HIV infection through injecting drug use*	London	Total number of reports: Injecting drug use	n	113	136	132	110
	Scotland	Total number of reports: Injecting drug use	n	28	49	26	52
	Rest of UK	Total number of reports: Injecting drug use	n	59	72	56	62
	UK	Total number of reports: Men who have sex with men & injecting drug use	n	43	51	48	42
Prevalence among those having voluntary confidential HIV tests	Scotland	All injectors tested	%	2.8	3.2	1.9	2.9
Proportion HIV antibody positive [~]	England, Wales & Northern Ireland [^]	Current and former injectors	%	1.3	1.8	1.6	1.3
		First injected during the last 3 years	%	0.8	0.0	0.0	0.4
Behaviour							
Passing on or receiving used needles or syringes in the last month - self reports [~]	England, Wales & Northern Ireland [^]	Current injectors	%	-	24	20	18
		Current injectors aged ≤24	%	-	35	27	25
		Current injectors who first injected during the last 3 years	%	-	26	22	23
Sharing of needles and syringes in past month - agency reports [¶]	Scotland	Current injectors	%	-	-	-	-
			%	-	-	-	-
Sharing of any injecting equipment in past month [~]	England, Wales & Northern Ireland [^]	Current injectors	%	-	-	-	-
Markers of health care utilization							
Ever used a needle exchange [~]	England, Wales & Northern Ireland [^]	Current injectors who first injected during the last 3 years	%	-	-	-	-
Ever had a voluntary confidential test for hepatitis C [~]	England, Wales & Northern Ireland [^]	Current & former injectors	%	-	-	-	-
Hepatitis B vaccine uptake - self reports [~]	England, Wales & Northern Ireland [^]	First injected during the last 3 years	%	-	-	-	-
		Current & former injectors	%	-	-	-	-
Proportion of those <i>unaware</i> that they have hepatitis C infection - self reported [~]	England, Wales & Northern Ireland [^]	Current & former injectors anti-HCV positive	%	-	-	-	-
Proportion of those <i>unaware</i> that they have HIV infection - self reported [~]	England, Wales & Northern Ireland [^]	Current & former injectors anti-HIV positive	%	-	-	-	-

Data on exposure is often incomplete or missing.

^ Includes Northern Ireland from 2002.

~ Unlinked Anonymous Prevalence Monitoring Programme survey of injectors in contact with drug services.

* Numbers may be subject to revision due to reporting delay.

** Scottish data can not distinguish between acute and chronic hepatitis B infection.

*** Northern Ireland data prior to 2003 could not distinguish between acute and chronic hepatitis B infection: 2003 there were 12 acute cases, 20 in 2004, 20 in 2005, 17 in 2006, 27 in 2007 and 19 in 2008.

¶ Scottish drug misuse database: data are for financial years, for example, 2002 data relates to 2002/03 financial year.

1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
796	1,391	2,003	2,483	3,811	4,612	4,487	4,149	4,759	5,520	6,195	6,193	6,873	7,764	8,190
76	80	86	92	91	90	91	95	96	95	96	96	95	98	99
43	167	365	341	334	326	301	256	285	262	184	274	310	295	266
100	88	84	97	96	98	96	96	98	100	100	100	100	100	100
841	1,142	1,228	1,540	1,994	1,978	1,884	1,690	1,796	1,647	1,657	1,614	1,535	1,550	1,720
88	86	89	88	93	93	93	94	92	92	92	89	86	88	88
43	63	55	54	65	46	54	65	75	86	100	134	135	115	132
27	43	53	64	68	78	82	75	89	86	100	93	100	100	88
51	-	43	-	41	35	35	36	39	42	41	42	41	39	40
23	-	28	-	12	11	11	18	15	20	20	16	21	21	22
-	77	80	68	-	62	-	64	-	-	-	-	67	72	63
-	59	61	43	-	41	-	42	-	-	-	-	51	36	35
603	584	525	621	806	712	704	554	829	676	-	-	-	-	-
26	39	41	48	45	51	46	37	37	38	-	-	-	-	-
30	28	45	31	37	38	24	44	55	25	-	-	-	-	-
32	55	64	53	71	54	35	39	69	27	-	-	-	-	-
166	152	184	215	295	386	360	357	354	342	341	372	375	475	615
10	9	10	11	20	30	25	19	11	6.4	6.5	5.9	3.5	1.7	0.3
33	30	31	22	18	24	42	37	67	62	59	72	76	104	101
29	22	22	18	22	20	21	21	22	22	21	19	21	15	13
10	5	7	3	5	5	7	8	7	9	7	7	10	5	2
90	120	90	81	65	54	54	58	68	73	67	64	94	69	48
29	22	34	30	17	18	16	17	10	13	11	20	14	7	15
67	73	77	65	68	50	48	67	48	83	70	96	79	90	89
46	38	55	23	32	24	32	20	28	22	15	18	11	10	10
1.5	1.5	1.5	1.4	0.8	0.7	0.7	0.7	0.5	0.6	0.5	0.9	0.7	0.3	0.5
1.1	1.4	0.6	1.0	0.9	0.8	0.8	1.0	1.0	1.2	1.4	1.6	1.3	1.1	1.6
0.1	0.2	0.3	0.3	0.4	0.1	0.0	0.4	0.3	0.8	0.6	1.3	0.8	1.0	1.3
17	17	18	17	32	33	31	33	34	29	28	28	23	23	19
25	26	24	25	38	40	31	36	43	37	36	38	29	26	22
21	22	21	22	31	31	24	28	33	28	27	28	21	25	17
-	-	28	28	34	34	34	35	33	34	31	27	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-	29	27	-
-	-	58	55	63	63	60	59	60	55	55	53	48	47	37
-	-	-	-	-	-	84	86	83	86	85	84	85	86	91
-	-	-	-	-	-	49	54	58	63	67	71	75	74	74
-	-	-	-	14	17	26	28	36	42	51	46	61	54	62
-	-	-	-	25	29	35	37	43	50	56	59	65	66	72
-	-	-	-	-	-	60	59	58	53	49	48	45	48	50
-	13	29	38	32	16	18	40	21	31	50	53	36	36	36

† Publication of hepatitis B surveillance was stopped between 2004 and 2007 due to problems with the routine laboratory surveillance system. Through the implementation by the HPA of national standards for the surveillance of hepatitis B and C in England, cases of acute hepatitis B are now reported nationally from local health protection units. This data is not directly comparable to that from earlier years; the 2008 data for England is reported in the text.

‡ Denotes past or current infection with hepatitis B/C. The sensitivity of the current oral fluid test used for antibodies to hepatitis C is approximately 92%. Samples prior to 1998 were collected with a different oral fluid collection device; the hepatitis C test using this older device has sensitivity of approximately 74% and results presented here are adjusted so as to be comparable with those from samples collected using the current oral fluid collection device. The sensitivity of the oral fluid test used for antibodies to hepatitis B core antigen was approximately 75% up to 2006, due to changes in the available laboratory consumables a revised test was introduced in 2007 the sensitivity of which is still being confirmed.

HTLV-II (Human T-Cell Lymphotropic Virus, type II)

40. HTLV-II is endemic among native Amerindian tribes⁵³ and, in Europe, it has been documented among IDUs⁵⁴. HTLV-II infection has been associated with neurological disorders⁵⁵, an increased risk of bacterial infections and, in those co-infected with HIV, an increased risk of neuropathy⁵⁶.
41. Between 2002 and 2008 there were 607 individuals who were newly diagnosed with HTLV and reported to CfI, of whom 31 were known to be HTLV-II infected and 16 were co-infected HTLV-I and HTLV-II. Of the 31 individuals diagnosed with HTLV-II infection, the probable route of infection was reported for 13 individuals: nearly a third were infected through heterosexual intercourse with an IDU partner, just under a quarter were infected through injecting drug use, with a similar proportion infected through heterosexual intercourse with no information on the partner, and the remaining people were infected through other routes (blood/blood products, mother-to-child transmission, or heterosexual contact). Country of birth was reported for 17 of the 31 individuals diagnosed with HTLV-II, among whom 82% were born in the UK, 12% in Europe and 6% in Africa. As there is no routine testing for the infection among IDUs, HTLV-II infection among this group is likely to be under-diagnosed.

42. IDUs are vulnerable to a range of bacterial infections, such as wound botulism, 'gas gangrene', and bacteraemia, as a result of non-sterile injecting or injecting contaminated drugs. In recent years these acute infections have caused growing public health problems.

Staphylococcus aureus Infections

43. *Staphylococcus aureus* is a common pathogen among IDUs, causing infections that vary in severity from minor skin and soft tissue infections to life-threatening invasive disease, such as bacteraemia and endocarditis. Typically, isolates from these individuals are methicillin-sensitive *S. aureus* (MSSA), but little is known about the extent or epidemiology of MSSA among the IDUs in the UK. More recently, methicillin-resistant *S. aureus* (MRSA) has been reported in IDUs in Switzerland and the United States of America.
44. A number of laboratories in England and Wales have reported encountering MRSA as a cause of injecting drug use related sepsis in the community^{57,58}. The HPA *Staphylococcus* Reference Unit (SRU) has received sporadic and small clusters of isolates for testing. Between April 2003 and December 2008, a total of 74 cases of injecting drug use-related sepsis, due to a community-associated MRSA (CA-MRSA) clone, have been identified from geographically distinct areas throughout England and Wales. These included 58 males and 16 females; 58 presented with skin and soft tissue infection (for example, injection site abscesses and ulcers), 25 with bacteraemia, four with endocarditis and one with pneumonia (clinical data were not available for five). Cases are continuing to be reported.
45. Detailed analysis of the MRSA isolates has revealed that they belong to a CA-MRSA clone that displays a number of characteristic markers¹. This clone is distinct from the healthcare-associated MRSA in the UK (commonly known as EMRSA-15 and EMRSA-16). In accordance with international nomenclature, this clone is known as ST1-MRSA-IV, is one of the most common CA-MRSA strains currently seen in England and Wales⁵⁹ and has been reported previously in Australia⁶⁰. It is important to note that this strain does *not* encode the Panton-Valentine Leukocidin (PVL) toxin that has been associated with serious, life-threatening disease. Nevertheless, as with PVL-positive CA-MRSA strains, this clone can cause skin and soft tissue infection.
46. The mainly sporadic occurrence of the MRSA strains, with their geographical and temporal distribution, does not suggest a drug contamination problem. Continued surveillance will further our understanding of the pathogenicity and epidemiology of this unusual clone.

¹Based on reports received at the Centre for Infections by the end of May 2009.

¹The MRSA exhibit a distinctive antibiogram (ciprofloxacin susceptible, but fusidic acid and erythromycin resistant), they are lysed by a broad range of bacteriophages, encode enterotoxins A and H, and belong to clonal complex1 (CC1).

47. Mandatory enhanced surveillance of MRSA bacteraemias was started in England in October 2005. Between 2006 and 2008, risk factor information regarding injecting drug use was completed in 31% (4,688 of 14,914) of MRSA bacteraemia cases in England^k. Of these 4,688 cases, 3% (148) reported injecting drug use as one of the risk factors associated with MRSA bacteraemia. Over half (102) of these cases were among individuals aged 49 years or less and half (78) were reported from London and South West of England. By comparison, less than one quarter of cases where injecting drug use was not reported as a risk factor were among individuals aged less than 50 years, and a third (1,373) were reported from London and South West of England. The proportion of cases among men is similar among cases with and without injecting drug use reported as a risk factor, at around one-third.
48. Among the 148 MRSA bacteraemia cases with injecting drug use as risk a factor, two-thirds of cases (91) probably acquired their infection in the community (that is, diagnosed on presentation or within two days following admission) and the remaining one third probably acquired it in the hospital setting; by contrast, among cases where injecting drug use was not identified, the reverse was found with one-third (1,732) of cases probably acquiring infection in the community and two-thirds in the hospital.

Group A Streptococcal Infections

49. Group A streptococci (GAS) can cause skin sepsis and tissue necrosis, potentially leading to bacteraemia, through the infection of injecting sites.

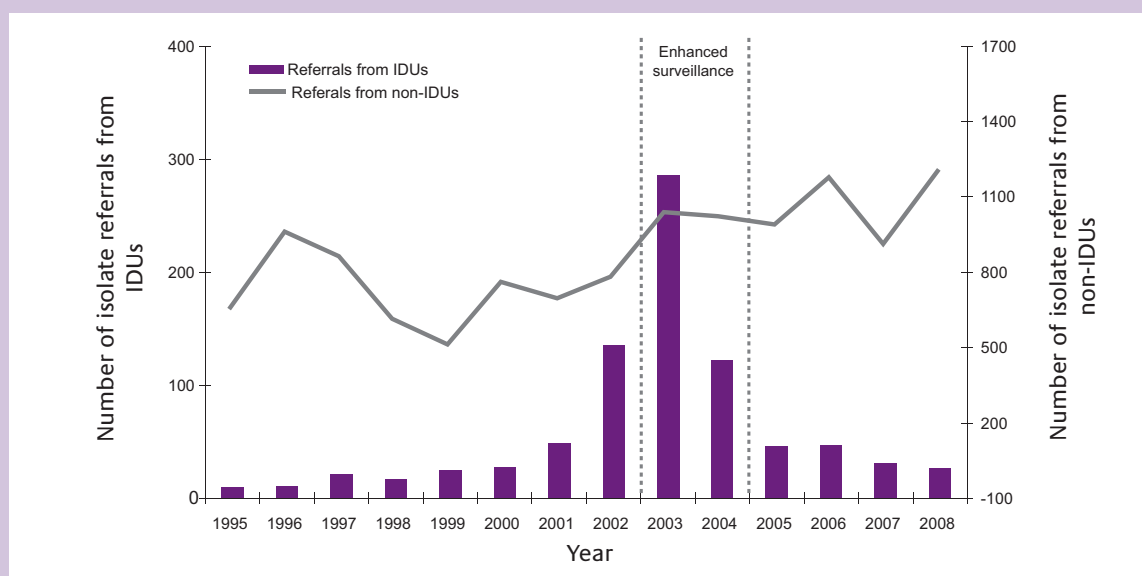
50. Although routine laboratory reports of invasive GAS infections to Cfl rarely contain information on risk factors, isolate referrals to the HPA's Streptococcus and Diphtheria Reference Unit do contain such information. Monitoring of these identified a substantial rise in referrals from IDUs during the early 2000s, from less than 10 per annum in the early to mid-1990s to 286 invasive GAS reports in IDUs in 2003 (Figure 7).
51. Enhanced surveillance data gathered during the strep-EURO programme (2003-04) confirmed that injecting drug use was one of the most important risk factors for severe group A streptococcal infections in the UK at that point in time, with one in five reports being in IDUs⁶¹. This was higher than in the other European countries participating. Skin and soft tissue infections were found to be the most common presentation among UK IDUs during 2003-04, but a range of other clinical presentations were also identified, in particular pneumonia⁶². The geographical and temporal dissemination, along with the serological typing data, did not suggest a drug contamination problem.
52. Since 2003, the number of referrals from IDUs has fallen substantially (Figure 7). In 2008 there were 27 referrals from IDUs. Current enhanced surveillance provides further evidence of the decrease in infections in drug injectors⁶³.

Clostridial infections

53. Clostridia are a group of spore-forming bacteria that are widely found in the environment. The spores produced by these bacteria may end up in drugs, such as heroin, through environmental contamination. They may cause

Figure 7:

Invasive isolates of group A streptococci from injecting drug user (IDU) and non-IDU patients: United Kingdom 1995 to 2008



Data source: Group A streptococci sterile site isolate referrals to the HPA Streptococcus & Diphtheria Reference Unit.

^kRisk factor information is voluntarily completed and is only completed in between 29-36% of MRSA bacteraemia cases, therefore the numbers are small. Data has been provided as a total over the 3 year period because any trends will be difficult to interpret with such low numbers. Risk factor fields are not mutually exclusive, therefore a patient may have IDU and one or more risk factors ticked. If more than one risk factor is reported, it is not possible to identify which is more likely associated with the bacteraemia from the information collected. Data is correct as of January 23rd 2009.

wound infections among IDUs, particularly if they enter an intramuscular or subcutaneous injection site¹, and can then produce toxins causing illness such as tetanus or 'gas gangrene', with potentially severe or fatal outcomes.

Wound botulism

54. Botulism is an illness caused by toxins produced by the bacterium *Clostridium botulinum*. Wound botulism occurs when wounds, such as injecting sites, are infected with *C. botulinum*. Clinical symptoms can progress rapidly from blurred vision, slurred speech and muscle weakness, to paralysis and respiratory failure. This can result in hospitalisation and lengthy recovery periods and, in some cases, can be fatal. Botulinum antitoxin is effective at reducing symptoms, if given early in the course of the infection.
55. Cases of wound botulism continue to occur among IDUs in the UK. In 2008 there were reports of four suspected cases and there were three, 22, 28 and 41 cases reported in 2007, 2006, 2005, and 2004, respectively^m. Of the cases in 2008, all were in England with reports from four of the nine regions⁶⁴. Prior to 2000, no cases of wound botulism had been reported among IDUs in the UK⁶⁵. By the end of 2008, a total of 132 suspected cases had been reported. Overall, 114 (86%) of the cases occurred in England, 15 in Scotland, two in Wales, and one in Northern Ireland. At least seven individuals are known to have died. Where information was available, the majority reported injecting heroin and the average length of the injecting career was around 10 years⁶⁶.

Tetanus

56. A toxin produced by *Clostridium tetani* causes tetanus. It usually presents with local fixed muscle rigidity and painful spasms confined to the area close to the site of injury or injection. However, symptoms can range from mild trismus ('lockjaw'), neck stiffness and/or abdominal rigidity, to generalised tetanus (a serious condition that can include respiratory difficulties and severe painful spasms). Tetanus is a vaccine-preventable disease and the vaccine is routinely offered in childhood and adolescence, as well as to adults for specific indications¹³. Potential sources for tetanus infection in IDUs are contaminated drugs, injecting equipment and skin.
57. Before 2003, tetanus had rarely been reported in IDUs in the UK, with only two of the 175 cases identified in England and Wales through enhanced surveillance between 1984 and 2000, known to be IDUs⁶⁷. This was in contrast to reports from the United States of America, where IDUs accounted for around one in six cases between 1995 and 2000⁶⁸. The situation changed in 2003 when an outbreak of tetanus developed among IDUs in the UK, with 25 cases reported between 2003 and 2004^{69,70,71}. The majority had generalised tetanus and three cases died. Most cases reported subcutaneous injection of heroin ('skin popping'), and

the majority were in women with the male cases being older. Many cases were un-immunised or partially-immunised and most had tetanus antibody levels below the protective threshold. This has led to vaccination guidance for IDUs being updated to ensure that their tetanus immunisation status is actively checked¹³ and that the use of human tetanus immunoglobulin is considered for IDUs with injection-site infections. In 2008 there were four cases of tetanus, none of which were associated with injecting drug use. In the three year period from 2005 to 2007, seven of the fourteen cases of tetanus reported in the UK were in IDUs indicating that tetanus has continued to affect IDUs, albeit at lower levels than in 2003 and 2004.

Other Clostridial infections

58. In addition to botulism and tetanus there are other serious clostridial infections that may be acquired through injecting contaminated drugs. During 2000 there was an outbreak of *Clostridium novyi* leading to serious illness and death among IDUs^{72,73}. Laboratory work has shown that *C. novyi* spores can easily survive the 'cooking-up' process prior to heroin injection⁷⁴. There have been reports of *Clostridium histolyticum* infection among IDUs⁷⁵, some of whom also had tetanus. Molecular typing has revealed that isolates from cases across the UK in 2003 were indistinguishable, indicating a common source of contamination⁷⁶.

Reported symptoms of injecting-site infections

59. Symptoms of a possible injecting-site infection would appear to be common among IDUs, as 31% (654 of 2,138) of IDUs participating in the UAPMP survey in 2008 reported they had experienced an abscess, sore or open wound, possible symptoms of an injecting-site infection, during the previous year. The reporting of such a symptom was associated with having been homeless in the last year, with 34% (513 of 773) of those homeless during the last year reporting a symptom, compared with 29% (366 of 1,250) of those not homeless.
60. These symptoms of possible injecting-site infections were found to be associated with a number of factors among current IDUs. Overall, 35% (523 of 1,504) of the current IDUs participating in the UAPMP survey in 2008 reported these symptoms during the last year. Current IDUs who used the following injection sites during the last four weeks reported higher levels of symptoms: hands (42%, 159 of 378, compared with 32%, 364 of 1,126, of those who had not), legs (60%, 162 of 271, compared with 29%, 361 of 1,233, of those who had not) and feet (53%, 85 of 159, compared with 33%, 438 of 1,345, of those who had not). Higher levels of symptoms were also found among those who, in the last four weeks, had injected crack cocaine (42%, 223 of 535, compared with 31%, 300 of 969, of those who had not), or cocaine (45%, 77 of 173, compared with 34%, 446 of 1,331, of those who had not).

¹Tissue damage at intramuscular or subcutaneous injection sites is more likely to lead to an anaerobic environment.

^mThe numbers of cases of botulism for past years are different from those previously reported following a database review.

Risk and Protective Behaviours

61. Infections among IDUs have been associated with a wide range of behavioural and environmental factors, such as the sharing of injecting equipment and homelessness. A range of preventative interventions have been adopted in the UK, such as NEX, which are designed to reduce the harm associated with drug use.

England, Wales & Northern Ireland

62. The sharing of needles and syringes (direct sharing) is a key route by which infections may be transmitted among IDUs. The current IDUs participating in the UAPMP survey were asked about direct sharing and 19% (343 of 1,798) reported sharing in the four weeks before taking part in the survey in 2008. This is the lowest level of direct sharing reported in this survey for over a decade (Figure 8). In 1997, direct sharing was reported by 17% (313 of 1,794). It then rose to 34% (601 of 1,775) in 2002, before falling to 23% in 2007 (487 of 2,093). In England, direct sharing was reported by 19% (316 of 1,683) in 2008 and, when combining data for 2007 and 2008, 19% (17 of 89) reported this in Northern Ireland and 20% (48 of 241) in Wales.

63. Direct sharing in the last four weeks was more common among those current IDUs who reported injecting crack cocaine (23%, 139 of 616, compared with 17%, 204 of 1,182, of those who had not), injecting cocaine (31%, 58 of 189, compared with 18%, 285 of 1,609, of those who had not), injecting an amphetamine (27%, 86 of 321, compared with 17%, 257 of 1,477, of those who had not), and having been homeless in the last year (22%, 154 of 705 compared with 17%, 171 of 997, those who had not).

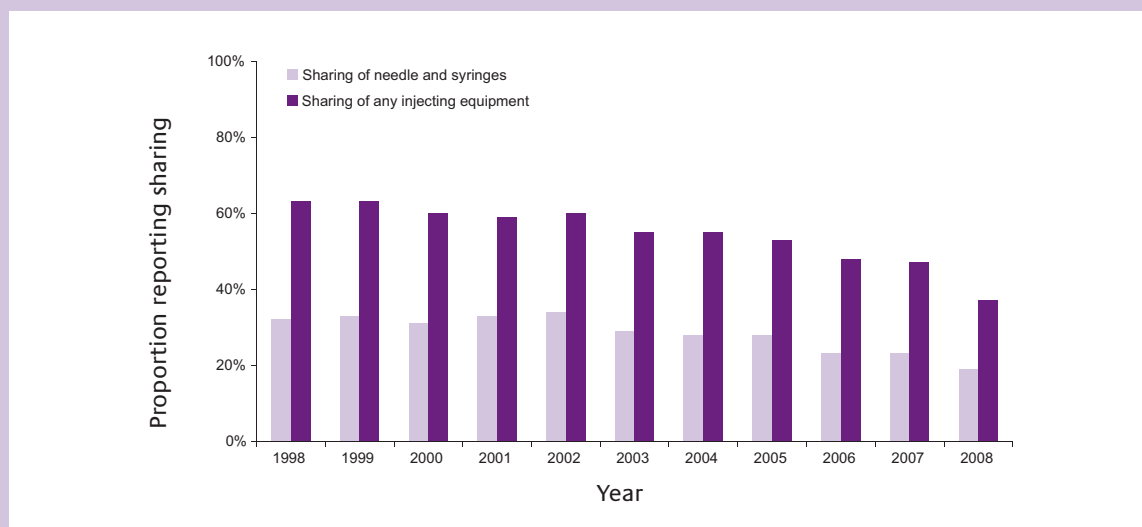
64. The sharing of filters, mixing containers and flushing water can also pass on infections and participants in the UAPMP survey continued to report sharing of these items (Figure 8). In England, 37% (613 of 1,668) of current injectors reported sharing these items in 2008, compared with 54% (894 of 1,647) in 2002. Substantial levels of sharing were also reported in Wales (38%, 94 of 248) and in Northern Ireland (25%, 22 of 89) (2007 and 2008 data combined). The most commonly shared items in England, Wales and Northern Ireland were mixing containers such as spoons (31%, 596 of 1,947).

65. In 2008, almost all the current and former IDUs participating in the UAPMP survey in England reported that they had accessed a NEX service (91%, 2,589 of 2,848). High levels were also found in Wales (94%, 454 of 484) and in Northern Ireland (94%, 291 of 310) (2007 and 2008 data combined). Throughout England, Wales and Northern Ireland 91% (2,880 of 3,159) reported accessing a NEX, and among recent initiates it was 86% (333 of 386) (Table 1).

66. The proportion of current and former IDUs who have taken up an offer of hepatitis B vaccination has increased markedly over time, rising from around a quarter (25%, 784 of 3,114) in 1998, to almost three-quarters (72%, 2,259 of 3,140) in 2008 (UAPMP survey self-reported dataⁿ, Table 1). Self-reported vaccination uptake varied by region and country (combining 2007 and 2008 data, Figure 4), and in Wales was 60% (290 of 484) and in Northern Ireland 79% (247 of 311). Of those who reported vaccination, almost two thirds self-reported receiving three or more doses (60%, 1,285 of 2,140).

Figure 8:

The sharing of needles and syringes & any injecting equipment^{**} among current injectors* in England, Wales & Northern Ireland[^]: 1998 to 2008



* Those who injected drugs during the four weeks prior to participating in the survey.

** Needles, syringes, filters, mixing containers, or water.

[^] Includes Northern Ireland from 2002.

Data Source: Unlinked Anonymous Prevalence Monitoring Programme survey of injectors in contact with drug agencies

ⁿ Vaccination uptake data should be interpreted with caution as they are based on self-reports.

^o Provisional data.

2,125), this compares with 42% (309 of 741) in 1998. In 2008, among recent initiates, 62% (238 of 383) reported uptake of the vaccine, much higher than the level reported in 1998 (14%, 99 of 699).

Scotland

67. In the financial year 2007/08^o, drug treatment agency reports to the Scottish Drug Misuse Database (SDMD) indicated that 27% of current IDUs had shared a needle and syringe in the previous month; this compares with 29% in 2006/07. In 2007/08^o, IDUs who 'shared a needle or syringe' can be broken down into 13% who had 'used a needle or syringe that someone else had used' in the previous month; and 16% who had 'lent someone else a needle or syringe which they had used' in the previous month. Rates for sharing needles and syringes ranged from 35% to 27% during previous years 2001/02 to 2005/06 (Table 1). Given that questions on needle/syringe sharing were asked differently pre- and post-April 2006, the data are not directly comparable across these two periods^o.

68. Community-wide surveys of IDUs in Glasgow found a significant increase in hepatitis B vaccine uptake among those who had injected for five years or less in 2001/02 (52% of 387) compared with 1993, 1994 and January-March 1999 (16% of 432)⁷⁷. Further increases in vaccine uptake were seen among IDUs who had injected for five years or less, surveyed in Glasgow during 2004 (65% of 167), 2005 (60% of 104) and 2007 (60% of 68)⁷⁸.

69. Large numbers of IDUs continue to report injecting practices that put them at risk of acquiring infections. Though the level of needle and syringe (direct) sharing has declined in recent years, it remains higher than in the middle of the 1990s⁸² with just under a quarter of IDUs reporting this during the previous month in 2008. The sharing of other injecting-related equipment, particularly mixing containers and filters, has also declined, but remains more common. As a consequence, HIV, hepatitis B and C infections are continuing to occur among IDUs in the UK. Combining data from across the UK suggest that overall, about one in 73 IDUs is now infected with HIV, around one in six has been exposed to hepatitis B, and over two fifths of IDUs have been infected with hepatitis C. In addition, having an abscess, open wound, or sore at an injection site during the last year is reported by around one in three IDUs.

70. There is evidence that the raised level of HIV transmission among IDUs within the UK seen in recent years is being sustained. In particular, the HIV prevalence among recent initiates, those injecting for less than three years, has been raised since 2002, and is at a level previously recorded only in 1990. The overall prevalence of HIV among IDUs in the UK also remains higher than it was at the beginning of the decade. However, it is still low compared with many other countries. The prevalence is higher among current IDUs in London with around one in 20 infected. Elsewhere in England and Wales, the prevalence was about one in 91 in 2008, up from around one in 400 in 2002. The prevalence in Northern Ireland was around one in 45 in 2008, while the lowest prevalence of around one in 200 was found in Scotland. The annual number of reports of newly diagnosed HIV infections associated with injecting drug use has not changed greatly over recent years. However, the proportion of the reports from outside London and Scotland has increased, from 38% during the period 1994-1998 to 51% during 2004-2008. In recent years, around half of all these newly diagnosed infections are thought to have been acquired abroad.

71. IDUs continue to be vulnerable to a number of vaccine-preventable infections. New hepatitis B infections are continuing to occur among IDUs, even though hepatitis B vaccine coverage has increased in recent years. Though the majority of IDUs have now taken up the offer of vaccination, there are regional variations in the levels of uptake. The overall improvement in uptake of the vaccine probably reflects improved

^o The SDMD was revised in April 2006, such that data are now collected from clients upon commencement of a new episode of care rather than each time they attend a new agency. From 2008 data will be collected at defined points throughout a care episode: i.e. assessment, 3 months, 12 months and annually thereafter. In addition, the questions on sharing of injecting equipment were revised, as follows: SDMD (pre April 2006) asked "Have you lent/borrowed/shared needles/syringes?" and "Have you lent/borrowed/shared spoons/water/filters/solutions?"; SDMD (April 2006 - present) asked: "Have you used a needle or syringe that someone else has used?", "Have you lent someone else a needle or syringe which you have used?" and "Have you used the same spoon, filter or water as someone else?"

^q Health professionals in contact with IDUs should ask clients about their tetanus immunisation status and provide boosters or a full vaccination course as appropriate. IDUs who have not received five doses of tetanus vaccine, or who are unsure of their vaccination status, should be offered vaccination boosters as appropriate. Unvaccinated IDUs should be encouraged to complete a full course of tetanus vaccinations¹³.

^r These are both risk factors associated with wound botulism.

provision through drug services and the prison vaccination programmes^{79,77}. Following the outbreaks of tetanus⁶⁹ and hepatitis A⁵⁰ earlier this decade, consideration should be given to offering vaccination or boosters against these infections, as appropriate⁴. Introducing hepatitis A vaccination^{13,80}, in conjunction with existing hepatitis B vaccination programmes, should be examined, as there is combined hepatitis A and B vaccine which may be more popular with clients than using the single vaccines⁸⁰. Recent examinations of vaccine provision to IDUs have noted limitations in provision of hepatitis B and other vaccines, particularly by NEX^{20,91,92,79}. It is of concern that many NEX services do not provide onsite vaccination, given that these are likely to be the first drug services that new IDUs will come into contact with.

72. Around a third of IDUs report having an abscess, open wound, or sore at an injection site during the past year. Simple conservative estimates of the annual healthcare costs associated with injection site infections suggest that these may range from £15.5 - £47 million per year⁸¹. The vast majority of these costs were due to hospital admissions associated with more severe infections. These will include injecting-related MRSA and severe GAS infections. The increased occurrence of these bacterial infections might reflect an increased vulnerability of IDUs due to changes in risk behaviour⁸², which could be associated with the increased use of crack-cocaine⁹⁹. The decrease in reports of GAS infections since 2003, particularly in specific areas of northern England⁸³, may be attributable to the success of targeted healthcare interventions, but this needs confirmation. Clostridial infections have also continued to occur among IDUs. Botulism cases have also been reported in several other European countries^{84,85,86,87,88}. Healthcare workers should remain alert to the possibility of clostridial infections among IDUs, particularly those who inject subcutaneously, or intramuscularly⁷.
73. Hepatitis C is probably the most important infection among IDUs, with over two-fifths of IDUs having been exposed to it. In England and Wales, recent data indicates that the prevalence of hepatitis C among IDUs fell markedly between 1992 and 1998⁴³, supporting previous data from Glasgow which also suggested a decline during the early to mid-1990s⁴⁶. These declines might, in part, be a result of the harm-reduction interventions, such as NEX, and opiate substitution therapy (OST), which were widely adopted in the late 1980s and early 1990s in response to HIV. In England and Wales, the overall hepatitis C prevalence has increased since the beginning of the current decade. More worryingly, there is evidence indicating that ongoing transmission has been elevated in recent years, with the prevalence among recent initiates having increased from around one in ten in the late 1990s, to around one in five in 2008.

74. IDUs often depict hepatitis C as ubiquitous and "beyond prevention"⁸⁹. However, hepatitis C infection does not have to be an inevitable consequence of injecting drug use, as is shown by the marked regional variations among IDUs in the UK. Prevalence ranges from less than a quarter among IDUs in Wales and the North East of England, to more than half of IDUs in London, Glasgow and the North West of England. Studies looking at incidence have also found regional variations, with recent cohort studies suggesting a more than six-fold difference in incidence between London⁴¹ and Wales⁴⁴. The reasons for these geographical variations are unclear and require further examination.

75. Concern about the ongoing transmission of hepatitis C among IDUs led to the Advisory Council on the Misuse of Drugs setting up a Hepatitis C Prevention Working Group. Earlier this year, the group made 12 recommendations to improve the control of hepatitis C infection among IDUs; these include actions concerning voluntary confidential testing for hepatitis C, provision of NEX, research and public health surveillance (box)⁹⁰.

76. Voluntary confidential testing for hepatitis C has increased markedly over recent years, with three-quarters of IDUs in contact with drug services reporting having accepted the offer of a test. There has also been an increase in the uptake of voluntary confidential tests for HIV, with around three in 10 IDUs in contact with drug services reporting *never* having had a test in 2008, which is the lowest level ever recorded in the UAPMP survey. Almost half of IDUs with hepatitis C infection, in contact with drug services in England and Wales, are still unaware of their infection and many with HIV also remain unaware of their infection. These individuals will thus not be able to access treatment and care for these infections. Reviews have also highlighted limitations in access to both HIV and hepatitis C testing by IDUs²⁰. In line with the national hepatitis C action plans and other strategies, there is a continuing need to improve the commissioning of HIV and hepatitis C testing services for IDUs.

77. NEX schemes are the key service for reducing infections and maintaining good injection hygiene, as they provide sterile injection equipment, information and advice. Recent examinations of NEX provision^{20,91,92} have highlighted a great diversity in provision across the UK, and supported previous concerns about the insufficiency of current NEX coverage²⁹. Recent studies have highlighted the importance of intervention coverage in preventing infections^{93,94,95,96}. The significant reductions in both the frequency of injecting and the rates of direct sharing reported among recent initiates in Glasgow⁹⁷, following revised guidelines by Scotland's Lord Advocate allowing greater numbers of needles

and syringes to be obtained per NEX visit, are encouraging. While these changes may have stemmed from factors other than the increased availability, the study concluded that new policy should continue⁹⁷ and that IDUs should be encouraged to make use of their entitlement to a greater number of sterile needles and syringes. Infections, such as hepatitis C, may be reduced by the provision of sterile injecting equipment other than needles and syringes, such as filters, while the correct use of sterile swabs before injection could help reduce bacterial infections at injecting sites. There is currently great variability in the range of injecting equipment offered to clients, in addition to needles and syringes^{20,91,92,98}.

78. There is growing body of international evidence from both modelling and research studies that indicate that both NEX and OST can effectively reduce BBV transmission, as long as they have sufficient coverage^{93,94,95,96}. Analysis of the Amsterdam Cohort Study suggests that, among persistent IDUs, high level coverage of NEX and OST is effective at preventing infection⁹⁵. Recent initial analyses of data from Wales and England also suggest that hepatitis C incidence maybe lower among IDUs exposed to high-level NEX and OST, compared to those with no, or only partial, exposure to these interventions⁹⁶.
79. Those commissioning services for drug users should monitor these, to ensure the adequate provision of clean injecting equipment to prevent sharing of needles and syringes, and that this provision is responsive to changing patterns of drug use and risk. They should also monitor provision of sterile water, swabs, mixing containers, citric acid, and filters, and access to vaccination and testing for hepatitis C and HIV, to ensure easily accessible provision, appropriate to need. These services should be developed in line with the recent NICE public health intervention guidance⁷ and the Scottish National Guidelines for Services Providing Injection Equipment⁸, to encourage the optimal provision of NEX schemes among injecting drug users.
80. Ongoing information on the extent of NEX provision is needed for the monitoring of intervention coverage. The NTA is currently implementing a national monitoring system (NEXMS) to record levels of needle and syringe distribution and returns across England. The NTA is working with local partnerships and external partners, such as the HPA, to improve the data quality and utility of the NEXMS data, to improve local and national understanding of needle and syringe provision. As part of Scotland's Hepatitis C Action Plan¹⁷, a comparable data collection system will also be developed to monitor the provision of injection equipment in Scotland; in the interim, an updated survey on provision of injecting equipment in Scotland (relating to the period 2007/08) has recently been published⁹⁸. These developments will, in the future, permit more effective monitoring of NEX provision through out the UK.
81. There is evidence that both the injecting of crack-cocaine⁹⁹ and injecting in to the 'groin' (femoral vein)¹⁰⁰ may have become more commonplace in recent years. These changes are of concern, due to the associations between these practices and higher levels of infection¹⁰¹. However, there is a need to further investigate the associations between crack-cocaine use and risk, as the extent to which other factors, such as homelessness, may interplay with crack-cocaine use remains unclear^{102,103}.
82. There is a need for research and development projects, to pilot and evaluate innovative intervention options for improving injection hygiene, like novel approaches to providing practical training to IDUs on safer injecting. Such projects should draw upon the lessons learnt in other countries, such as the pilots of Drug Consumption Rooms^{104,105,106,107}. There is also a need for studies to examine the appropriate mix and coverage of a range of existing interventions in the UK that aim to prevent infections, including specialist drug treatment, NEX, and targeted outreach, and how to effectively assess the ongoing impact of these interventions on transmission⁹⁰.
83. IDUs in the UK are continuing to contract a wide range of infections, and public health surveillance systems need to be maintained and developed to provide continued vigilance. For example, systems to improve our understanding of the extent of injecting site infections need to be investigated and developed. There are continuing issues with availability of exposure information in laboratory data on hepatitis A and B. Improving the quality and consistency of the surveillance of viral hepatitis, through the more complete reporting of laboratory diagnoses with clinical and risk factor information, is needed. There is ongoing work to improve surveillance of viral hepatitis through the implementation of national standards for the surveillance of hepatitis B and C⁴⁹ by the HPA. This is now starting to provide better data through the collation, at a national level, of data on acute hepatitis B cases from local health protection units.
84. The UAPMP survey continues to provide valuable data on blood-borne viruses and associated risks among IDUs in contact with services. In light of recent methodological developments, such as Respondent Driven Sampling¹⁰⁸ and the use of dried blood spot samples¹⁰⁹ to test for viruses, sero-behavioural surveillance among IDUs needs to be further developed. The HPA is currently implementing a programme of changes to the UAPMP survey of IDUs which include moving to the collection of dried blood spot samples. These changes will permit the use of a wider range of laboratory tests, including testing for hepatitis C RNA (subject to sufficient resources being available) and so the monitoring of hepatitis C incidence. As part of Scotland's *Hepatitis C Action Plan*^{16,17} a companion survey in Scotland is being implemented. These developments will provide comprehensive UK-wide data.

Box:

Recommendations from the Advisory Council on the Misuse of Drugs report on The Primary Prevention of Hepatitis C among Injecting Drug User

Recommendation 1.

Local service planners need to review local needle and syringe services (and be supported in this work) in order to take steps to increase access and availability to sterile injecting equipment and to increase the proportion of injectors who receive 100 per cent coverage of sterile injecting equipment in relation to their injecting frequency.

Recommendation 2.

Local services need to provide a comprehensive intervention so that those offering Opiate Substitution Therapy (OST) also provide access to sterile injecting equipment and those providing sterile injecting equipment facilitate entry into OST.

Recommendation 3.

All services (especially specialist drug clinics, low threshold agencies, and prisons) in regular contact with IDUs need to increase the frequency of hepatitis C diagnostic testing among their clients.

Recommendation 4.

Review workforce and training needs of needle exchanges (NEX) and other drug workers and if necessary develop further training in order to ensure that staff are competent and confident in providing hepatitis C and other blood borne virus antibody testing.

Recommendation 5.

Establish a monitoring programme to measure success against recommendations 3 and 4 such as: the proportion of specific agency caseloads tested for hepatitis C and other blood borne virus (including prisons, specialist drug clinics, and patients in OST shared care) and the proportion of IDUs tested anonymously that are unaware of their hepatitis C status.

Recommendation 6.

Studies are required that directly test the effectiveness of OST and NSP on reducing hepatitis C incidence (that is that generate evidence on the intervention effect).

Recommendation 7.

A study is required to measure the re-infection rate of injectors who have been treated for hepatitis C and to evaluate the effectiveness of providing hepatitis C treatment to current injectors in order to reduce hepatitis C incidence.

Recommendation 8.

Evaluate whether new health education messages have changed the perception and views of IDUs about the risk and inevitability of hepatitis C; and whether campaigns to teach and encourage IDUs to use bleach to clean injecting equipment (when sterile equipment is not available) have resulted in safer re-use of equipment.

Recommendation 9.

Studies are required to determine why IDUs with a prison history are at greater risk of hepatitis C, and to develop and trial appropriate harm reduction interventions within the prison service and in the community to reduce the risk.

Recommendation 10.

Develop and promote effective strategies to target and reduce hepatitis C risk among recent injectors.

Recommendation 11.

A study is required to investigate hepatitis C risk and prevalence among people that use performance and image-enhancing drugs.

Recommendation 12.

The public health surveillance of hepatitis C needs to be developed and extended so that it can monitor and provide evidence on the impact of interventions on hepatitis C risk; and if required the roles and responsibilities of public health scientists and public health agencies need to be extended in order to support the development and evaluation of hepatitis C interventions.

Advisory Council on the Misuse of Drugs. The Primary Prevention of Hepatitis C among Injecting Drug Users. London: Home Office, 2009. ISBN: 978 0 901144 07 2

Appendix: Sources of information and advice on reporting infections and investigating outbreaks

Notifiable diseases

Tetanus

Clinicians and Laboratories are requested to report all confirmed cases to Cfl in England, to the NPHS in Wales, to CDSC in Northern Ireland and to HPS in Scotland. Information and advice for clinicians, microbiologists and injecting drug users is available at: www.hpa.org.uk/infections/topics_az/tetanus/menu.htm and from HPS for Scotland at www.hps.scot.nhs.uk/immvax/tetanus.aspx?subjectid=126

Information on reference laboratory services for tetanus are included in the RSIL user manual at www.hpa.org.uk/web/HPAwebFile/HPAweb_C/1194947411598

Hepatitis A

Laboratories are requested to report all confirmed cases to Cfl in England, to the NPHS in Wales, to CDSC in Northern Ireland and to HPS in Scotland. Information and advice for clinicians and injecting drug users in England and Wales is available on the HPA website at: www.hpa.org.uk/infections/topics_az/hepatitis_a/menu.htm

Hepatitis B & C

Laboratories are requested to report all confirmed cases to Cfl in England, to the NPHS in Wales, to CDSC in Northern Ireland and to HPS in Scotland.

Further information can be found for hepatitis B at www.hpa.org.uk/infections/topics_az/hepatitis_b/menu.htm and www.hps.scot.nhs.uk/bbvsti/hepatitisb.aspx?subjectid=92

Further information can be found for hepatitis C at www.hpa.org.uk/infections/topics_az/hepatitis_c/menu.htm and www.hps.scot.nhs.uk/bbvsti/Hepatitisc.aspx?subjectid=93

Other infections

Wound botulism

Information and advice for clinicians and injecting drug users in England and Wales is available on the HPA website at: www.hpa.org.uk/infections/topics_az/botulism/menu.htm

Laboratory investigation of cases of botulism (detection of neurotoxin and isolation of *Clostridium botulinum*): Food Safety Microbiology Laboratory, Cfl, HPA, 61 Colindale Ave, London NW9 5EQ. Telephone: 020 8200 4400

Other clostridia infections

Identification of other clostridial, or other anaerobic, isolates from IDU wounds, blood and cultures: Anaerobe Reference Laboratory, NPHS Microbiology Cardiff, University Hospital of Wales, Cardiff, CF14 4XW Tel 02920 742378 or 742171

Group A streptococci

Information and advice for clinicians in England and Wales is available on the HPA website at: www.hpa.org.uk/webw/HPAweb&Page&HPAwebAutoListName/Page/1202487089434?p=1202487089434

Information on reference laboratory services for GAS are included in the RSIL user manual at www.hpa.org.uk/cfi/rsil/default.htm

Staphylococcus aureus infections

Information and advice for clinicians is available on the HPA website at www.hpa.org.uk/infections/topics_az/staphylo/default.htm. Identification and characterisation of MSSA and MRSA from IDUs: Staphylococcus Reference Unit, Cfl, HPA, 61 Colindale Avenue, London, NW9 5EQ. Telephone: 020 8327 7227.

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Data Sources:

Reports of HIV infection

Voluntary confidential reports of new HIV diagnoses are received from laboratories and clinicians in England, Wales, and Northern Ireland by Cfl. Scottish and paediatric data is collected locally and incorporated with data from England, Wales and Northern Ireland on a quarterly basis to create a UK dataset. Surveillance began in 1982 with AIDS case reporting and expanded to include laboratory reporting of HIV diagnoses in 1985. In England, Wales and Northern Ireland, clinician HIV reports were introduced in 2000 to supplement laboratory reporting, and the AIDS information is now collected on the clinician HIV report.

HIV-infected individuals accessing HIV-related care

A cross-sectional survey is carried out to identify all individuals with diagnosed HIV infection who attend for HIV-related care at NHS sites in England, Wales and Northern Ireland within a calendar year. Scottish and paediatric data is collected locally and incorporated annually to create a UK dataset. This survey has been repeated annually since 1995.

Laboratory reports of viral hepatitis and bacterial infection

Clinically significant infections diagnosed in England, Wales and Northern Ireland are routinely reported to Cfl and held on a central system known as LabBase2. Most laboratories participate in the system, even if reporting is not mandatory. LabBase2 is, therefore, one of the most comprehensive sources of surveillance data, covering nearly all microbiologically-confirmed infections. Data on infections caused by group A streptococci and hepatitis A, B and C were all extracted from this reporting system. These reports contain demographic and risk information, although the risk factor information is not always provided. In Scotland, HPS collates data on all confirmed HCV antibody tests from the main HCV testing laboratories in Glasgow, Edinburgh, Dundee and Aberdeen.

The Unlinked Anonymous Prevalence Monitoring Programme's survey of injecting drug users

The UAPMP aims to measure the distribution of infection in sub-groups of the adult population. In the surveys that make up the UAPMP, samples are irreversibly unlinked from any identifying information before testing. The UAPMP's surveys have ethical approval.

The UAPMP survey of IDUs monitors HIV, hepatitis B and hepatitis C in injectors in contact with specialist services, such as needle exchanges, or on treatment programmes, such as methadone maintenance. Those who agree to participate provide an oral fluid sample and complete a behavioural questionnaire. Detailed methods used for the survey have been published previously¹². The survey of IDUs has been ongoing since 1990 in England and Wales, and was extended to Northern Ireland in 2002.

Further information about the UAPMP and comprehensive tables of data are available at: www.hpa.org.uk/infections/topics_az/hiv_and_sti/hiv/epidemiology/ua.htm

Reference laboratory submissions

The key source of data on MRSA infections in IDUs is through referral of isolates to the SRU (part of Cfl) for reference microbiology.

Isolate referrals to the national reference laboratory RSIL (part of Cfl) are one of the primary sources of GAS infection reports (see strep-EURO below).

Data on clostridial infections is also available from reference microbiology work. For botulism, this is carried out by FSML and for tetanus by RSIL. For the other clostridia, this is undertaken by the Anaerobe Reference Laboratory, NPHS Microbiology Cardiff.

Strep-EURO

Data from reference laboratory isolates and routine laboratory reports was combined as part of a two-year enhanced surveillance programme (2003-04). Augmented surveillance data was sought through questionnaires sent to microbiologists nationally. Data reconciliation between the two sources has been maintained since the end of the project.

Notifications of infectious diseases

Clinicians throughout the UK are required by law to report a number of defined conditions to their local communicable disease specialist. Tetanus and hepatitis A, B and C are among these notifiable diseases.

Mandatory enhanced surveillance of MRSA bacteraemias

Acute and Foundation Trusts have been required to report MRSA bacteraemias since October 2005. In addition to mandatory information regarding each bacteraemia case, the system also collects further information concerning the consultant specialty, risk factors associated with MRSA bacteraemia and care details at the time the blood sample was taken. Cases of MRSA bacteraemia diagnosed on presentation, or within two days following admission to an acute NHS Trust, are defined as 'community associated', while cases diagnosed two or more days after admission are defined as 'hospital acquired', as the bacteraemia is believed to be acquired during the current hospital stay.

Enhanced surveillance of tetanus

Enhanced surveillance of tetanus is carried out by the Cfl Immunisation Department: www.hpa.org.uk/infections/topics_az/tetanus/menu.htm.

Surveillance of wound botulism

Surveillance of wound botulism among IDUs is carried out by the Cfl HIV & STI Department, with FSML. Reports are followed up with a surveillance questionnaire.

HTLV

The HIV & STI Department at Cfl collates reports of new HTLV diagnoses in England and Wales from laboratories and clinicians.

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