Increasing hepatitis B and C testing in the prison setting

The use of new diagnostics at HMP Manchester

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Executive Summary

Hepatitis B and C pose a major challenge to public health in the UK. Up to half a million people have one or both of these viruses, which can cause liver failure and cancer, yet only a minority have been diagnosed. Prevalence is particularly high in the prison population; even conservative estimates suggest 8% of people in prison have hepatitis B and 7% hepatitis C.

Current rates of testing are extremely low, however: less than 8% of prisoners will be screened for hepatitis C while in custody, and this is declining. The true prevalence of hepatitis B and C in English prisons today is therefore unknown but could be 20-40 times the national average.

In June 2011 a collaborative pilot project was launched in HMP Manchester. This introduced two new diagnostic devices to evaluate whether offering a wider range could increase diagnoses in the prison and to assess the acceptability of these new devices in the prison setting. The devices included were point of care tests, testing for hepatitis C antibodies using an oral fluid swab and giving a result in 20 minutes, and dried blood spot tests, a finger prick test for hepatitis B and C, including RNA, with results returned within 2 weeks.

Over the following three months 154 people were tested, a significant increase on the 0-30 tests per month average over the previous year. Of the tests conducted:

- 13 (8%) of tests returned a positive result
- 1 person was diagnosed with hepatitis B
- 12 people were diagnosed with hepatitis C
- 1 person who had hepatitis C was subsequently also diagnosed with HIV

The majority of staff expressed a preference for dried blood spot tests, citing the number of blood borne viruses that can be screened for, the ease of use of the test and the scope to test without using a needle as the main reasons for this.

Managing further testing and treatment proved difficult in this setting. Just one of the 5 people who tested positive on the hepatitis C antibody only point of care tests was known to have had the confirmatory blood test within 6 months. Of the eight people who have current hepatitis B or C infection, seven had been released or transferred within six months, two before referrals to local health services were possible. One person had started treatment but discontinued after his release.

These difficulties were felt to reflect more general challenges for treatment and healthcare in prison settings, and staff remained enthusiastic about the potential for increased testing and
treatment through this approach. Following the success of the project HMP Manchester succeeded in obtaining funding for ongoing dried blood spot testing in the prison.

A number of recommendations have been made in consequence of this project and the context in which it was delivered:

1. The universal offer of a combined hepatitis C, hepatitis B and HIV screen for all people entering prison, with the option of dried blood spot testing.

2. The number of blood borne virus tests offered, conducted, test results, and the number of prisoners accessing hepatitis B & C treatment be reported on an annual basis.

3. Development of information sharing protocols between prisons’ healthcare services and between prison healthcare and community services to ensure all parties have advance notice of outstanding tests, results and treatment needs for anyone being transferred or released.

4. Routine offer and constant availability of a hepatitis C, hepatitis B and HIV test for all prisoners accessing healthcare services.

5. Mandatory basic training in blood borne viruses for all prison staff, with a focus on hepatitis C.

6. Prison drug treatment staff trained in use of DBS testing and pre- and post-test discussion to test for hepatitis C, hepatitis B and HIV.

7. Increased hepatitis education for prisoners including through increased use of peer-based models.
1. Introduction

Hepatitis B and C pose a major challenge to public health in the UK. Up to half a million people have one or both of these viruses which, undiagnosed and untreated, can cause liver failure and cancer.\(^1\) Despite increased efforts in recent years less than 50% of people affected have been diagnosed.\(^2\)

Transmitted through blood to blood contact and, in the case of hepatitis B, through other body fluids including sexual contact, several distinct populations are more affected by these viruses than the population as a whole. These groups, in particular people who inject drugs and people from countries where viral hepatitis is endemic, tend to be ‘hard to reach’, with low levels of access to mainstream healthcare services. They are also disproportionately represented in the prison population.

Of the 130,000 people entering prisons in England and Wales, up to 50% of are estimated to be problem drug users\(^1\) and about 29% of prisoners report injecting drugs in the 4 weeks preceding incarceration.\(^3\) An estimated 50% of current and 30% of former injecting drug users have had hepatitis C, and 17% of current injectors have had hepatitis B. In addition, approximately 13% of prisoners in England are foreign nationals; more than 11,000 people from 159 countries including many where hepatitis B or C are endemic.\(^4\)

In recent years prisons have increasingly been recognised as being well placed for the delivery of public health services, particularly to hard to reach populations. The prisons hepatitis B vaccination programme, for example, is credited with the falling rates of hepatitis B among the entire injecting population in England in recent years.\(^5\) Unfortunately this potential is not yet being exploited in diagnosing viral hepatitis: less than 8% of people currently in prison will obtain a test there, and even this tiny proportion is declining year on year.\(^6,7\)

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\(^2\) Ibid


\(^6\) Parliamentary Question response from Paul Burstow to Paul Goggins, 8\(^{th}\) March 2012 (accessed 19 April 2012) [http://www.publications.parliament.uk/pa/cm201213/cmhansrd/cm120308/text/120308w0002.htm](http://www.publications.parliament.uk/pa/cm201213/cmhansrd/cm120308/text/120308w0002.htm)

Prevalence of viral hepatitis therefore remains high in the prison population. Across England about 0.5% of people are estimated to have hepatitis C and a slightly smaller proportion hepatitis B, while the last anonymous prison blood borne virus survey found 8% of prisoners had hepatitis B and 7% hepatitis C. This was conducted almost 15 years’ ago and more recent research in other similar countries has found a notably higher prevalence: for example 34% to 47% in Australia, 13% in America, and 17% in Scotland. Data from the Health Protection Agency’s sentinel surveillance of hepatitis B testing show an overall positivity rate of 1.2% in prisons, with notable spikes among Asian or Asian British, Black and Black British prisoners.

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2. The HMP Manchester Viral Hepatitis Testing Pilot

2.1 Background

HMP Manchester is a category A men’s prison taking both remand and sentenced prisoners. It has a total capacity of 1,200, about 34% of whom are on remand. One quarter of the population is 25 or younger, 56% between 26 and 45 and the remaining 19% over 45. The majority – 72% - is of a white British ethnic background, with black African (8%) and Asian (9.8%) groups constituting relatively large minorities.

In 2007 the Greater Manchester Hepatitis C Strategy obtained funding from local PCTs to increase testing and treatment for hepatitis C across the ten PCT areas. This funding was used to develop local services and led to the appointment of a dedicated hepatitis C nurse providing in-reach hepatitis C treatment in the Greater Manchester prisons. The appointment of this nurse has been successful in treating many prisoners for hepatitis C. However, testing in some prisons has been low and there is recognition that an increase in testing across prisons is required.

Health services in prison are currently commissioned by the local NHS, and delivered in partnership with the Prison Service to ensure that prisoners are given a service similar to what they would receive were they living in the community.

Prior to the introduction, and in line with 90% of UK prisons, full venous testing was the sole method of testing for BBVs within HMP Manchester.13 In Substance Misuse services across Greater Manchester, dried blood spot testing has been found to be more acceptable for clients and for staff, while a new point of care testing device able to detect HCV antibodies in 20-40 minutes is increasingly being used in the UK.

2.2 Aims

The primary aim of the HMP Manchester Viral Hepatitis Testing Pilot was to assess whether rapid point of care tests (POCTs) and/or dried blood spot tests (DBST) are considered an acceptable method for BBV testing by prison health care staff and prisoners. Integral to this was also the evaluation of whether the introduction of these tests can increase the offer and uptake of blood borne virus (BBV) testing in the prison setting.

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The central questions this pilot sought to answer were:

i. Are point of care tests (POCTs) and dried blood spot tests (DBSTs) feasible methods for BBV testing in prisons?

ii. Does the introduction of these tests increase the offer and uptake of testing?

iii. How does the acceptability of POCTs, DBSTs and venepuncture tests compare for staff and prisoners?

2.3 Methodology

The project ran from June 2011 for three months.

At the outset, the 14 participating Prison Healthcare Staff attended a half day introductory training course with The Hepatitis C Trust. The course covered basic information on hepatitis B and C, including transmission and prevention, disease management and treatment as well as the delivery of pre- and post-test discussions and the use of point of care tests with oral fluid and the use of dried blood spot tests.

As many of the people at greatest risk of viral hepatitis face multiple barriers to testing, which will often be reinforced in an enclosed institution such as a prison, the training also looked at likely barriers including a lack of awareness or understanding of BBVs, fear of needles and/or difficulty accessing veins for venous blood tests – a frequent issue for people who inject drugs – and a real or perceived stigma around being tested or being diagnosed. Strategies to address and overcome these barriers were covered in depth.

Staff began offering the tests immediately after the training, with the first test delivered within an hour of the end of the course. All prisoners visiting the healthcare wing were offered a test on a routine basis. Risk factors were not discussed prior to testing; the only people not offered testing were those who had recently been tested or who were already diagnosed.

Prisoners attending healthcare services were offered a screen for hepatitis C antibodies, or hepatitis B and C, with a venous sample, a dry blood spot test or rapid antibody point of care test (POCT). The number of tests taken with each type of test reflected availability of kits and, for venepuncture, availability of staff able to offer this.
A comprehensive care pathway was in place to facilitate the use of the new tests and the involvement of new staff in testing. Prisoners testing positive using the HCV POCT method were automatically referred for venous sampling for a confirmation venous blood sample including a PCR. PCR confirmations were automatically performed on antibody positive DBS samples and all prisoners with a positive PCR result were referred directly to the Hepatitis Specialist Nurse for further tests and assessment for treatment.

Staff recorded the use of the tests, dates and results on a central database designed specifically for the project as well as on the prison healthcare IT system.

At the end of the project staff were surveyed on their preferences, the reasons for these and on their perceptions of prisoners’ preferred method of testing. Six months after the end of the project the longer-term outcomes for each patient testing positive were followed up as far as possible via the prison’s patient records system.

2.4 Results

A total of 154 tests were conducted, a significant increase on the 0-30 tests per month done over the year leading up to the project. Of these 13 (8%) returned a positive result: 1 for hepatitis B surface antigens and 12 for hepatitis C antibodies. These were broken down across the different diagnostics as follows:

- 93 tests were conducted using point of care tests of which 5 (5%) returned a positive result.
- 51 tests were conducted using dried blood spot tests of which 7 (14%) returned a positive result.
- 10 tests were conducted using venepuncture of which 1 (10%) returned a positive result.

1 of the 5 people who tested positive through the POCT obtained a PCR test and result, which was positive, while the remaining 4 were either released or transferred before this could be obtained (3) or declined the blood test (1). All of the positive antibody tests done with dried blood spot and venepuncture were automatically tested for HCV RNA via PCR and all of these returned positive results (table 1).

Screening was offered to all prisoners and risks were not routinely recorded. Where a positive test was recorded, however, this was assessed. 10 of the 12 people testing positive for hepatitis C reported having ever injected drugs, one reported a risk relating to possible
sexual contact and one declined to give further information. The person testing positive for hepatitis B was from a country in which hepatitis B is endemic.

At the close of the project staff were surveyed on their preference of test. Overall, there was a clear preference for dried blood spot testing, with none of the 14 staff members reporting a preference for venepuncture and one reporting a preference for POCTs.

Reasons given for the use of both POCTs and DBSTs relate to their ease of use, with many more staff able to provide these than can offer venepuncture, while they also take less time to deliver. DBSTs were generally preferred over POCTs because of the more comprehensive results they provide as a single sample will give results for hepatitis B, hepatitis C antibodies and PCR as well as scope to include HIV and syphilis if required.

Staff also reported that this type of testing was preferred by prisoners, particularly as neither POCTs nor DBSTs involve a venepuncture blood test. It was felt that the lack of a need for a needle was pivotal to people accepting a test at all, and as they were able to get the test immediately the previous drop-out between people being offered a test and that test being done could be overcome.

Again dried blood spot was preferred to POCTs because of the more comprehensive screen; once the offer of a test had been accepted people tended to be keen for it to cover as much as possible, and all requested screening for both hepatitis B and hepatitis C. One person was reported to have refused DBS testing on the grounds that it did not include HIV and he would have to have an HIV test separately.
<table>
<thead>
<tr>
<th>Test conducted</th>
<th>Result HCV antibodies</th>
<th>Result HCV PCR</th>
<th>Result HBsAg</th>
<th>Outcome after 6 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>POCT</td>
<td>Positive</td>
<td>Positive</td>
<td>Not known</td>
<td>Venous PCR test obtained, positive result. Released with referral to local health services, not yet started treatment as living between 2 parts of the UK.</td>
</tr>
<tr>
<td>POCT</td>
<td>Positive</td>
<td>Not known</td>
<td>Not known</td>
<td>Blood taken for PCR but results not received. Released before follow-up was possible.</td>
</tr>
<tr>
<td>POCT</td>
<td>Positive</td>
<td>Not known</td>
<td>Not known</td>
<td>Did not attend for PCR. Transferred three times, further medical records unavailable.</td>
</tr>
<tr>
<td>POCT</td>
<td>Positive</td>
<td>Not known</td>
<td>Not known</td>
<td>Declined PCR test. Decided he’d rather not know.</td>
</tr>
<tr>
<td>POCT</td>
<td>Positive</td>
<td>Not known</td>
<td>Not known</td>
<td>Did not attend for PCR. Transferred but now returned to HMP Manchester and due for follow up.</td>
</tr>
<tr>
<td>DBST</td>
<td>Positive</td>
<td>Positive</td>
<td>Negative</td>
<td>Released without referral.</td>
</tr>
<tr>
<td>DBST</td>
<td>Positive</td>
<td>Positive</td>
<td>Negative</td>
<td>Released with referral but no known action, now returned to HMP Manchester and has re-engaged with prison health services.</td>
</tr>
<tr>
<td>DBST</td>
<td>Positive</td>
<td>Positive</td>
<td>Negative</td>
<td>Transferred, further medical records unavailable.</td>
</tr>
<tr>
<td>DBST</td>
<td>Positive</td>
<td>Positive</td>
<td>Negative</td>
<td>Started treatment in HMP Manchester but did not continue after release. Now returned and has re-engaged with prison health services.</td>
</tr>
<tr>
<td>DBST</td>
<td>Positive</td>
<td>Positive</td>
<td>Negative</td>
<td>Further screening identified HIV coinfection. Released with referral to local health services.</td>
</tr>
<tr>
<td>DBST</td>
<td>Negative</td>
<td>Negative</td>
<td>Positive</td>
<td>Released with referral to local health services.</td>
</tr>
<tr>
<td>Venous</td>
<td>Positive</td>
<td>Positive</td>
<td>Negative</td>
<td>Still at HMP Manchester. No action recorded.</td>
</tr>
</tbody>
</table>
2.5 Patient Outcomes

Outcomes for people who had tested positive for hepatitis C antibodies and/or RNA and for hepatitis B surface antigen were reviewed by the project team six month after the project was completed. While there was an effective and well documented care pathway in place, the frequent transfer and release of prisoners without sufficient time to manage their healthcare needs made engaging them with, where appropriate, further testing a treatment a considerable challenge.

Just one of the 5 people who had tested positive for hepatitis C antibodies on the POCT had obtained and received the results of an RNA test to check for ongoing infection. The other 4 had been released or transferred before this was possible.

Of the eight people who obtained a positive HCV RNA or HBsAg test, seven had been released or transferred within six months, five with and two without referrals to local health services. Activity beyond that point could not be followed up via the prison’s patient records system, unless they’d been transferred to a prison using the same system as HMP Manchester.

One person had started hepatitis C treatment in the prison following diagnosis but discontinued after his release, and three had been released or transferred and then had returned to HMP Manchester.
3. Conclusion

Hepatitis B and C are both important ongoing health challenges in the prison system, and improved rates of diagnoses as well as better engagement with these issues is vital. Of course the prison population has different needs in relation to blood borne viruses and this variation will and should be reflected in commissioning.

This pilot found that an alternative to venous blood sampling can be easily introduced and is considered acceptable to staff and to prisoners. It has also highlighted several specific challenges to tackling blood borne viruses common to many prisons, as well as pointing to ways in which these can be addressed.

Although a small, specific pilot in a single prison, the proportion of people diagnosed, the increase in the number of tests delivered and verbal feedback from staff clearly indicate that enabling more staff to test and offering a screen which does not involve venous blood sampling can rapidly improve testing rates in prisons.

Offering a full BBV screen as part of the overall health (second) assessment on entry to prison would also allow prisoners to take up testing without needing to engage with staff about their risk behaviours, a factor which may deter some from engaging.

Given that further screening identified one person co-infected with HIV, and with the marginal cost of an HIV screen being approximately £5, including HIV as well as hepatitis B and C screens could address additional health inequalities for a minimal increase in time and cost. This is also available via dried blood spot testing which is now being rolled out across the prison estate in Wales and, following this pilot, has been funded for ongoing use at HMP Manchester.14

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4. Recommendations

**Recommendation 1: The universal offer of a combined hepatitis C, hepatitis B and HIV screen for all people entering prison, with the option of dried blood spot testing**

Despite considerable changes to the demographics of the prison population in recent years, viral hepatitis services are being commissioned on the basis of studies done in 1997. Improved data on the numbers accessing testing and treatment is crucial to ensuring services are able to meet the needs of prisoners in future.

Essential to this will be increasing rates of testing (currently only about 8% for hepatitis C and unknown for hepatitis B) as well as the use of meaningful indicators. It’s important therefore that the offer of a test is not considered an end in itself, that staff are fully trained in pre-test discussion and that numbers of people being offered, numbers accepting, numbers of tests done and results and numbers accessing treatment are collated and made available annually.

**Recommendation 2: The number of blood borne virus tests offered, conducted, test results, and the number of prisoners accessing hepatitis B & C treatment be reported on an annual basis**

Clear monitoring and reporting of levels of testing and treatment is essential to evidencing improvement, understanding where the gaps lie and assessing what a realistic target for testing is.

Currently, reporting against Prison Health Performance and Quality Indicator (PHPQI) 1.29 on hepatitis C, recording the degree to which *All those at risk are offered confidential screening for hepatitis C*, is extremely low with many prisons reporting 0%, a lack of clarity as to whether this is a reporting issue, and no understanding of what actual levels might be. Clearly big improvements are required and only through transparent reporting and assessment can services meet the needs of this population.
**Recommendation 3: Development of information sharing protocols between prisons’ healthcare services and between prison healthcare and community services to ensure all parties have advance notice of outstanding tests, results and treatment needs for anyone being transferred or released**

Prisoners are often relocated or released at short notice and without time for their records and medicines to follow. This results in considerable problems with follow up and onward referral as well as difficulties adhering to treatment. IT systems are linked to some, but not all, local prisons and are not linked to health systems outside of prison, making it extremely difficult to ensure prisoners’ records are kept up to date and necessary health interventions carried out.

**Recommendation 4: Routine offer and constant availability of a hepatitis C, hepatitis B and HIV test for all prisoners accessing healthcare services**

Markers for hepatitis B and C infection can take up to 3 months to appear in blood tests. As 28% of prisoners report injecting during the month prior to their incarceration, screening solely on admission would likely miss people with recently acquired hepatitis B or C.

Admission to prison, particularly for the first time, can also be a difficult experience and not everyone will feel confident accepting BBV screening at their healthcare reception; providing additional opportunities to engage with this could be very beneficial in ensuring everyone who needs testing is tested.

**Recommendation 5: Mandatory basic training in blood borne viruses for all prison staff, with a focus on hepatitis C**

Knowledge and understanding of hepatitis B and C is low even in many prison health services, and is often considered an unnecessary addition to the heavy workloads of non-health specific staff. However, given the prevalence rates of BBVs – and particularly hepatitis C – in prisons it’s vital that staff have a basic level of understanding of these viruses and especially of how they are – and are not – transmitted. This is vital for their own peace of mind as well as to help staff work with prisoners who are or may be affected.

Inadequate BBV knowledge among staff makes prisoners’ choice to obtain testing more difficult, reinforces myths and misconceptions about these viruses and has a detrimental effect on those diagnosed. Moreover, as more treatment is provided and managed in prison it’s particularly important staff understand the impact these diseases and
treatments have – for example that people may not be able to undertake normal day to day activities – and the importance of adherence for the patient.

Recommendation 6: Prison drug treatment staff be trained in use of DBS testing and pre-and post-test discussion to test for hepatitis C, hepatitis B and HIV

Training drug treatment staff to discuss and provide hepatitis B and C and HIV testing ensures that every opportunity to engage the highest risk group in the prison can be taken. Given the prevalence particularly of hepatitis C among this group it’s also important that IDTS staff understand the condition well and that, where appropriate, they can provide DBS testing (not all staff will want to do this, however, or have the right skills).

Technologies such as dried blood spot tests can facilitate this and are being used in many non-clinical settings throughout the UK. These could prove extremely beneficial in the prison drug treatment context as is increasingly the case in drug services outside prison.

Recommendation 7: Increased hepatitis education for prisoners including through increased use of peer-based models

High prevalence, low rates of diagnosis, low levels of understanding and significant myths and misconceptions around BBVs are all heavily interlinked. A few very simple steps can prevent transmission of hepatitis B and hepatitis C but these will not be taken unless accurate information reaches those most likely to be at risk.

Prisoners as well as prison staff need to better understand how these viruses are and are not transmitted, how they can be avoided (both in and out of prison) and the options available to people who are diagnosed. As has been noted, prisons offer an excellent opportunity to engage groups which are otherwise very hard to reach for public health interventions and this opportunity should not be missed.

Interventions which have been shown to be particularly successful, particularly the use of peer education – from other current or from former prisoners – and support and of ‘community champions’ can work in the prison setting well and make a huge difference to all of the people affected.