Hepatitis C virus among inmates in Victorian correctional facilities.

A report of the prevalence of hepatitis C virus and the risk behaviours associated with the transmission of hepatitis C virus in Victorian correctional facilities.

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3 Glossary

ATSI – aboriginal and Torres Strait islander

BBV – blood borne virus

Burnet Institute – The Macfarlane Burnet Institute for Medical Research and Public Health

CI – confidence interval

CORE – The Public Correctional Enterprise

DHS – Department of Human Services

DOJ – Department of Justice

DPFC – Dame Phyllis Frost Centre

HBV – hepatitis B virus

HCV – hepatitis C virus

HIV – human immunodeficiency virus

IDUs - injecting drug users

OCSC – Office of the Correctional Services Commissioner

OR – odds ratios

VIDRL – Victorian Infectious Disease Reference Laboratories

+ve - positive

-ve - negative

4 Executive Summary

Background

The hepatitis C virus (HCV) is a major public health challenge in Australia. The primary health concern is that chronic HCV infection can lead to cirrhosis and hepatocellular carcinoma. It is estimated that 210,000 Australians with HCV antibodies (1% of the population) in Australia. HCV incidence in 2001 was estimated to be 16,000 new infections. Of all the people who are antibody positive 157,500 are estimated to have chronic HCV infection.

Injecting drug users (IDUs) represent a major risk group for the transmission of HCV. Of public health concern is the ongoing high incidence of HCV infection in this group despite programs that have proved effective in preventing the spread of blood borne viruses (BBVs) such as HIV and hepatitis B virus (HBV). The high prevalence of HCV among IDUs means that even infrequent risk-taking behaviour is sufficient to maintain a high rate of HCV transmission.

Prison settings are recognised world wide as being important sites for transmission of blood-borne viruses such as HIV, HBV and HCV, particularly where there are high rates of infection upon entry combined with continued injecting drug use in prisons. A seroprevalence study of prisoners entering Victorian correctional facilities was conducted between October 1991 and September 1992. Greater than 99% of all prison entrants participated in the study. The overall prevalence of HCV was 39%. Forty six percent of the study participants reported ever injecting drugs. Other studies in other states of Australia and overseas have reported high prevalence of BBVs amongst prisoners and cases of prisoners becoming infected with BBVs whilst in prison have been reported.

The prevalence and transmission of HCV must be understood if we are to reduce the impact of HCV in the community. IDUs are the group who are most commonly infected with HCV; they are also at increased risk of being infected with HBV and HIV. Prisoners are an important high-risk subgroup of IDUs. We need to know the prevalence and transmission risks of BBVs in this group to improve our understanding of BBVs in the general community.

Apart from the general public health benefit, it is important to recognise that the prison environment can increase the risk of BBV transmission. Risk behaviours taking place in prison include unsafe injecting of drugs, tattooing, body piercing and physical assaults. Although policy makers and management are aware of these potential risks, it is important to quantify the current prevalence of HCV in prisoners and the amount of risk behaviour that occurs in the prisons. Accurate information aids in assessing the extent of the problem, the urgency of the issue and the areas of greatest potential risk for the spread of the BBVs,

particularly HCV. It allows for strategic planning and the implementation of interventions to reduce the spread of HCV and other BBVS in a risk-focused fashion. It also enables these programs to be formally evaluated following their implementation.

Study - Aim and Method

The aim of this study was to estimate the prevalence and determinants of HCV exposure among inmates in Victorian correctional facilities. It also measured risk factors associated with the transmission of HCV both inside and outside the prison. The results assist in the development and updating of programs to reduce the transmission of BBVs, particularly HCV transmission among correctional services staff and inmates.

The study was a cross sectional study undertaken in Victorian correctional facilities (in public and private, male and female facilities). The study was voluntary. It measured the prevalence of HCV in Victorian Correctional facilities and examined risk behaviours by participating prisoners that may lead to the transmission of HCV and other BBVs. Researchers from the Macfarlane Burnet Institute for Medical Research and Public Health (Burnet Institute) conducted the study. An advisory committee was established to discuss study methodology, prison participation and management of the study results. Members of the advisory committee included researchers from the Burnet Institute, and representatives from the Office of the Correctional Services Commissioner (OCSC), the Prisoner Health Care Unit, Department of Human Services Victoria (DHS), the Public Correctional Enterprise (CORE), Group 4 and ACM and the Hepatitis C Council of Victoria.

Five correctional facilities participated in the study; Port Phillip Prison; Fulham Correctional Centre, Loddon Prison, Barwon Prison and Dame Phyllis Frost Centre (DPFC). Correctional facility management and staff who participated in the study were consulted about the proposal and study methodology in the project's early stages, as were prisoner peers and listeners. All prisoners in the cooperating facilities were invited to participate in the research project. Prisoners completed a questionnaire that asked about risk behaviours leading to HCV infection and provided a blood sample that was tested for the HCV antibody.

Results

Six hundred and forty-two prisoners participated in the study of which all completed a study questionnaire. One hundred and fifty one prisoners from Port Phillip Prison, 164 from Fulham Correctional Centre, 116 from Loddon Prison, 87 from Barwon Prison and 124 from DPFC participated in the study. Six hundred and thirty prisoners (98%) provided a blood sample. Prisoners who participated in the study were not markedly different from the profile of all prisoners as described in the *Statistical Profile The Victorian Prison System 1995/1996 to 1999/2000.* The major difference between the groups are the prisoners in the study were

younger than reported in the *Statistical Profile*, a greater percentage were on remand and a higher number or study prisoners reported the crime that led them to being in prison this time was drug related.

Three hundred and sixty two (57.5%) prisoners were HCV antibody positive. Of those who were HCV antibody positive 337 (93.9%) reported a history of injecting drug use. Four hundred and thirty-six prisoners (68.6%) reported ever-injecting drugs of which 337 (79.1%) were HCV antibody positive. Fifty five percent of males and 66.7% of females were HCV antibody positive.

Of the 436 prisoners who reported ever injecting drugs, 311 (74.9%) had injected drugs in the week before entering prison and 337 (80.3%) had injected drugs in the month before entering prison. Three hundred and twenty two (74.9%) prisoners who had ever injected drugs reported injecting drugs whilst in prison. Two hundred and twenty-three prisoners (34.74% of the total number of prisoners participating in the study or 51.15% of prisoners with a history of injecting drug use) had injected drugs this time in prison of which 43 (20.3%) had injected drugs in prison in the month before the study.

There was a difference in injecting behaviour for prisoners who had injected drugs in prison compared to when they injected drugs in the community. Prisoners were more likely to share a needle and syringe when inside prison and were less likely to use a brand new needle and syringe. There was no association between sharing needles and being HCV positive. There was an increase risk of being HCV antibody positive if people shared their spoons. Sharing filters was close to statistical significance but no association was found for sharing other equipment and being HCV antibody positive. There was no association between how injecting equipment was cleaned and being HCV antibody positive.

Prisoners who were HCV antibody positive were younger; they were more likely to have injected drugs and to have been injecting for a longer time. They were also more likely to have injected drugs in prison this time. Prisoners who were HCV antibody positive were more likely to have had a tattoo in prison. The risk factors associated with HVC infection for prisoners who reported they had *never* injected drugs were having a tattoo in prison and being of Aboriginal and Torres Strait Island descent (ATSI).

Conclusions

The results of this study show that many prisoners in Victorian correctional facilities have HCV antibody, have a history of injecting drug use and continue to inject drugs whilst in prison placing them at risk of contracting a blood borne virus infection. The results also show that prisoners are at risk of contracting blood borne virus infections in prison due to tattooing.

The results of this study, although deeply concerning, are not surprising considering the high prevalence of HCV antibodies among IDUs in the community and that a high percentage of people we incarcerate have injected drugs. The prevalence of HCV in Victorian correctional facilities was high in 1991-1992 and little has changed within the correctional system that would have led to a reduction in the prevalence of HCV amongst prisoners.

Injecting drug use and blood borne virus transmission is a community public health problem, not simply a prison problem. At the same time, it must be recognised that prisons can exacerbate the problem and place people at increased risk of contracting a blood borne virus infection. Prisons alter the behaviour of IDUs. IDUs are less likely to inject safely because they do not have access to clean needles and syringes. This increases their risk of contracting a BBV. Prisons also increase the risk of people who are not IDUs contracting a BBV because behaviours such as tattooing are illegal inside Victorian prisons, and the HCV prevalence is so high.

The issues surrounding improved prisoner health care and prevention of transmission of BBVs in prison are complex and sensitive but they can and should be solved. Injecting drug use and HCV and prisons is a public health problem and a public health opportunity. The majority of prisoners are incarcerated for less than 12 months after which they re-enter the community. The entire community, as well as individual prisoners, will benefit if we provide improved health care, disease prevention and harm reduction to this group whilst they are in prison.

Recommendations arising from the report

- Hepatitis B and Hepatitis A vaccinations should be available to all prisoners free. The Hepatitis C Strategy that is due for release by the Victorian Government also makes this recommendation.
- Improved access to education and information regarding HCV and other BBVs.
- Conduct a feasibility study that examines prisoner access to treatment (interferon and ribavirin) for HCV and the supports that are required when people are receiving treatment for HCV. The study should assess what needs to be done to allow prisoners to access treatment for HCV.
- Improved access to dietary eduction and advice related to HCV and other BBVs.
- Effective education about safe injecting and harm reduction (that is relevant to the prisoners both inside and following release from prison) is required. Individuals/groups who are independent of the prison system should provide this program.

- Improved access to drug treatment programs and increased flexibility of drug treatment.
- Tattooing and body piercing should be legalised and a trained practitioner should be available to perform tattooing and body piercing in prisons.
- The difference in penalties need to be clear and meaningful if a prisoner has cannabis is identified in a urine drug screen compared with having an injectable drug identified in their urine test.
- The benefits, risks and difficulties in providing needle and syringe programs in prisons should be evaluated. This assessment should include issues such as the general management of the prison, staff occupational health, industrial relations, prisoner health and safety and the legal issues surrounding the providing a program. The legal issues associated with not providing a program should also be examined taking into account the high percentage of prisoners who are IDUs and are HCV positive, the risk of contracting other BBVs whilst in prison and that unsafe injecting occurs in prisons.

Whilst the formal assessment of introducing a needle and syringe program is being conducted there needs to be improved provision of bleach to reduce the impact of transmission of BBVs.

5 Background to project

The hepatitis C virus (HCV) is a major public health challenge in Australia. The primary health concern is that chronic HCV infection can lead to cirrhosis and hepatocellular carcinoma. It is estimated that 210,000 Australians with HCV antibodies (1% of the population) in Australia. HCV incidence in 2001 was estimated to be 16,000 new infections. Of all the people who are antibody positive 157,500 are estimated to have chronic HCV infection. around 16,000 new infections occur each year (1). The cost of HCV to the public health system and the community is enormous. In 1996-1997, estimates of the direct costs (eg. combined health related and social costs) of HCV amounted to at least $75 million per annum while estimates of indirect costs (eg. production loss) amounted to at least $32.5 million per annum (2)

The first National Hepatitis C Strategy 1999-2000 to 2003-2004 aims to minimise the transmission of HCV and to minimise the personal and social impact for those infected with the virus (3). Four priority areas identified for action are surveillance and epidemiology, testing, clinical management and counselling, and education and prevention. In Victoria, the Department of Human Services (DHS) is due to release the Victorian Hepatitis C Strategy as a response to the National Strategy (4).

5.1 Injecting drug users in prison

Injecting drug users (IDUs) represent a major risk group for the transmission of HCV. Of public health concern is the ongoing high incidence of HCV infection in this group despite programs that have proved effective in preventing the spread of blood borne viruses (BBVs) such as HIV and hepatitis B virus (HBV) (5). The high prevalence of HCV among IDUs means that even infrequent risk-taking behaviour is sufficient to maintain a high rate of HCV transmission (6).

Prison settings are recognised world wide as being important sites for transmission of blood-borne viruses such as HIV, HBV and HCV, particularly where there are high rates of infection upon entry combined with continued injecting drug use in prisons (7, 8).

A seroprevalence study of prisoners entering Victorian correctional facilities was conducted between October 1991 and September 1992. Greater than 99% of all prison entrants participated in the study. The overall prevalence of HCV was 39%. Forty six percent of the study participants reported ever injecting drugs; the prevalence of HCV was 63.6% in men who reported injecting drugs compared with 16% in those who did not report injecting drugs; the prevalence of HCV was 85% in women who reported injecting drugs compared with 26% in those who did not report injecting drugs (9). A small number of IDUs in prison were interviewed as part of the 1991-1992 study. Almost half of these prisoners had injected drugs

in the previous month, 60% had a tattoo whilst in prison and over 90% were HCV antibody positive (10).

Prisoners entering the Victorian prison system are offered testing for HIV, HCV and HBV. The percentage of HIV testing in Victorian prisons per reception in the early 1990s was over 97%; this fell to 80.1% in 1996 and to 64.2% in 1997 (11). The percentage of prisoners being tested for HIV on reception to prison in 2002 was approximately 30% (personal communications –DHS). HIV prevalence was 0.2% in 1991, rose to 0.6% in 1993 and declined to 0.2% in 1997 (11).

A 1994 study conducted in New South Wales reported 37% of male prisoners entering prisons were HCV antibody-positive (12) (13). Predictors of HCV infection were a history of injecting drug use and past exposure to HBV. A 1996 study by the same group reported the rates of HCV exposure remained high with a HCV prevalence of 33% in males prisoners and 66% in females prisoners (12) (13). In this study twenty-one percent of men and 32% of women reported injecting drugs in prison; 18% of men and 11% of women did so in the week before the interview. Of those who had injected drugs in prison, 69% of men and 64% of women reported that they had shared needles (14). A further study in 1999 that reviewed the medical files of current inmates in the NSW prison system reported that approximately half the inmates had been tested and 47% were HCV antibody positive (15). Another study conducted in NSW prisons reported evidence of new infections with HCV occurring within prisons (16).

A study *"Hepatitis C; a study of prevalence in WA prisons"* was commissioned by the Department of Justice in Western Australia and conducted by the WA Hepatitis Council in 2001. This study tested 322 of the then 2433 male prisoners and 50 of the 156 female prisoners. Twenty-three percent of men and 46% of women tested positive for HCV antibody although there was marked disparity in prevalence between prisons in the city as opposed to rural areas. The highest prevalence was in a women's prison located in Perth where 58.6% of women were HCV antibody positive. Two men's prisons in Perth had prevalences of around 35%.

Studies from other countries have also reported a high percentage of prisoners who were HCV antibody positive. One study reported HCV seropositivity in 45-50% of prison inmates; 80-90% of those who were HCV positive were IDUs (8). Other studies have reported high prevalence of HCV and other BBVs in prisoners. They also report ongoing injecting drugs in prison and sharing of needles and equipment (17) (18) (19) (20) (21).

5.2 Rationale

The prevalence and transmission of HCV must be understood if we are to reduce the impact of HCV in the community. Monitoring the transmission of HCV can be difficult because the majority of people infected with the virus do not have overt symptoms and HCV most commonly affects marginalised populations who are less likely to seek medical care.

IDUs are the group who are most commonly infected with HCV; they are also at increased risk of being infected with HBV and HIV [McDonald, 2001 #419]. To reduce the transmission of HCV and other BBVs this population must be targeted. It must also be appreciated that IDUs are not one homogenous group; there is evidence of differential risks for HCV (and other BBVs) between IDU sub-groups such as ethnic Vietnamese, prison populations, street based IDUs, body builders etc [Hocking, 2001 #325] (22). It is also important to appreciate that IDUs can move from one sub-group to another or function within a series of sub-groups at the same time.

If we are to implement useful and effective public health programs to reduce the risks of HCV in the community, it is important to have surveillance systems that can provide ongoing and accurate data on the prevalence (and thereby indirect estimations of incidence) of HCV in these high-risk IDU groups.

Prisoners include an important high-risk subgroup of IDUs. We need to know the prevalence and transmission risks of BBVs in this group to improve our understanding of BBVs in the community. There is an obvious need to evaluate the current prevalence of HCV in Victorian correctional facilities to aid in the development of preventive health strategies and formulation of appropriate health care policies for inmates. Despite the high prevalence of HCV in young prisoners entering prison in the early 1990s in Victoria there have been neither ongoing nor recent measurements of HCV prevalence in this population.

Apart from the general public health benefit it is important to recognise that the prison environment can increase the risk of BBV transmission. Risk behaviours taking place in prison include unsafe injecting of drugs, tattooing, body piercing and physical assaults. Although policy makers and management are aware of these potential risks it is important to quantify the current prevalence of HCV in prisoners and the amount of risk behaviour that occurs in the prisons. Accurate information aids in assessing the extent of the problem, the urgency of the issue and the areas of greatest potential risk for the spread of the BBVs, particularly HCV. It allows for strategic planning and the implementation of interventions to reduce the spread of HCV and other BBVS in a risk-focused fashion and for the success of these interventions to be measured.

Accurate information allows policy makers and prison management to plan the future health needs of prisoners, keeping in mind the long-term public health benefit to the community. Prisoners do not exist in a vacuum. The majority of prisoners are incarcerated for less than 10 months and then return to the community. Many prisoners have a history of injecting drug use. Therefore if we are to manage the public health issues surrounding the transmission of HCV and other BBVs in Victoria we must improve our knowledge of the prevalence and risk of transmissions of these viruses within prisons. This is a public health benefit to both prisoners and the general public.

6 Study objectives

To estimate the prevalence and determinants of HCV exposure among inmates in Victorian correctional facilities

To measure risk factors associated with the transmission of HCV both inside and outside the prison. The results assist in the development and updating of programs to reduce the transmission of BBVs, particularly HCV transmission among correctional services staff and inmates.

To use the study results and experience gained from implementing the study to design an ongoing monitoring program of blood borne virus prevalence in prisons in Victoria

7 Study Method

The study was a cross sectional study undertaken in Victorian correctional facilities (in public and private, male and female facilities). It measured the prevalence of HCV in Victorian Correctional facilities and examined risk behaviours by participating prisoners that may lead to the transmission of HCV and other BBVs. Researchers from the Macfarlane Burnet Institute for Medical Research and Public Health (Burnet Institute) conducted the study.

An advisory committee was established to discuss study methodology, prison participation and management of the study results. Members of the advisory committee included researchers from the Burnet Institute, and representatives from the Office of the Correctional Services Commissioner, the Prisoner Health Care Unit (OCSC), DHS Victoria, the Public Correctional Enterprise (CORE), Group 4 and ACM and the Hepatitis C Council of Victoria.

7.1 Correction facility selection

Correctional facilities were selected following consultation with the Department of Justice (DOJ) and the Corrections Health Board. Male and female participants from either public or private prisons were included. Five correctional facilities participated in the study.

- Port Phillip Prison
- Fulham Correctionnel Centre
- Loddon Prison
- Barwon Prison
- Dame Phyllis Frost Centre (DPFC)

Correctional facility management and staff who participated in the study were consulted about the proposal and study methodology in the project's early stages. All prisoners in the cooperating facilities were invited to participate in the research project. The study aimed to recruit 600 prisoners allowing the study to be powered to detect a >5% change in HCV seroprevalence from the previous 1991 study.

7.2 Study preparation and recruitment

Management at the five prisons selected to participate in the study were approached; all agreed to participate in the study. Meetings were then held with prison staff and prisoner peers (or equivalent) to explain the aims of the study and to discuss the study methodology. The recruitment methodology was adjusted following feedback from these groups. The advisory committee, study staff with experience in prison research and prisoner peers, reviewed the study questionnaire. Adjustments were made to the questionnaire following feedback at each stage of this process.

Each prison had a *Recruitment Day*. Prior to the *Recruitment Day* staff from the Burnet Institute visited the prison and spoke with prison staff and prisoners about the study method and its objectives.

On *Recruitment Da*y the research staff entered the prison and moved from prison unit to unit. Prisoners were invited to participate in the study; all participation was voluntary.

If a prisoner agreed to participate in the study they were asked to select an envelope from a box. This was to reassure prisoners that their study number was a random selection. The envelope contained a Plain Language Statement, a consent form and a questionnaire and specially marked filter paper for the blood spots. The questionnaire and the filter paper had a matching study number so that they could be linked but there was no information that identified the prisoner. The study was de-identified at the request of prisoners due to concern about DNA testing. Prisoners read the plain language statement; study researchers answered any questions and the prisoner then signed a consent form. After signing the consent form prisoners were asked to complete a study questionnaire and give a finger prick blood sample.

The questionnaire was designed to be self-administered but research staff and prisoner peers assisted prisoners who had difficulties with language and/or literacy. After completing the questionnaire it was placed in an envelope and deposited in a *Ballot Box*. This methodology reassured prisoners that prison staff would not have access to their results.

After completing the questionnaire a study researcher with appropriate training used a lancet to prick the prisoner's finger. Three blood spots were placed on specially marked blotting/filter paper. This was then placed in an envelope and deposited in a *Ballot Box.* This methodology again reassured prisoners that prison staff would not have access to their results. All sharps were placed in appropriate containers. The method used reassured prison staff that prisoners did not have access to sharps.

7.3 Specimen testing and analysis

Victorian Infectious Disease Reference Laboratories (VIDRL) conducted serological testing of specimens for antibodies to HCV. The test results were sent under code to the Burnet Institute. The method employed for HCV serology testing in this project was validated by VIDRL from a reliable group of donors and was used as HCV positive controls in the tests. This ensured the specificity and sensitivity of the serology test.

7.4 Storage of results

The study consent forms, questionnaires and blood test results are stored in a locked filing cabinet. No material connects individual participants to their results.

The study results shall be stored at the Burnet Institute for seven years following the completion of the study.

7.5 Data analysis

The study results were placed on an Access database. Results were analysed using SPSS and STATA statistical packages

8 Results

Six hundred and forty-two prisoners participated in the study of whom all completed a study questionnaire. One hundred and fifty one prisoners from Port Phillip Prison, 164 from Fulham Correctional Centre, 116 from Loddon Prison, 87 from Barwon Prison and 124 from DPFC participated in the study. Six hundred and thirty prisoners (98%) provided a blood sample. On the day the study was conducted there were 670 prisoners at muster in Port Phillip prison, 708 in Fulham prison, 331 in Loddon Prison, 301 in Barwon Prison and 200 in DPFC. Not all prisoners were available to participate in the study. Due to issues of prison security prisoners in protection did not participate in the study except at DPFC. Loddon is a medium and minimum-security prison; prisoners who were on work duty outside the prison were unable to participate in the study. A number of prisoners at all five prisons who were involved in work details at the time the study team visited their unit were unable to participate in the study.

The mean age of prisoners in the study was 31.6 years. The mean age of female prisoners was 30.4 years and the mean age of male prisoners was 32 years. Eighty-three percent of prisoners were sentenced and 17% were on remand. The mean number of times a prisoner had been in prison, either sentence or remand including this time in prison was 3.8; the median was two (Table 1). Of the 525 prisoners who had been sentenced 432 had identified a specific identifiable crime leading to their incarceration. The most common of these was “crime involving violence” followed by “property crime (unarmed burglary, theft). The time a sentenced prisoner was expected to serve was recorded. Approximately 60% of prisoners had been sentenced to serve less than two years. The profile of prisoners in the study was compared to the profile of all prisoners as described in the *Statistical Profile The Victorian Prison System 1995/1996 to 1999/2000* (23)(Table 2). Due to difference in data collection regarding the crime leading to a prisoner being incarcerated it is not possible to make specific statistical comparisons of the two groups.

The major difference between the groups are the prisoners in the study were younger than reported in the *Statistical Profile*, a greater percentage were on remand and a higher number or study prisoners reported the crime that led them to being in prison this time was drug related. Of interest is a 4.6% of sentenced prisoners in the study reported they were incarcerated because of possession of drug. The *Statistical Profile* in 2000 reports no prisoners were incarcerated where possession of drugs was the most serious offence.

Table 1. Comparison of prisoners in the study with all prisoners in the *Statistical Profile The Victorian Prison System 1995/1996 to 1999/2000*.

Group	**Study Group**	**All prisoners - 2000**
	n = 642	**n = 3,153**
Mean age	31.6 years	34.5 years
Median age	30 years	31.7 years
Mean age –males	32 years	34.6
Mean age - females	30.3 years	32.5
Unsentenced	17%	13.8%
% with prior imprisonment	62.1%	60.4%

Table 2. Comparison of prisoners in the study with sentenced prisoners in the *Statistical Profile The Victorian Prison System 1995/1996 to 1999/2000*.

Group	**Study Group**	**Sentenced prisoners - 2000**
	n = 525	**n = 2717**
Offence		
Fraud	5.8%	3.5%
Drug possession/dealing	15.7%	10.9%
Property crime/theft*	21.1%	24.1%
Violent crime**	38.9%	43.5%
Expected time to serve (sentenced prisoners)	Cumulative %	Cumulative %
3months and under	3.8%	5.3%
12 months and under	33.1%	39.8%
5 years and under	79.1%	80.7%
10 years and under	90.0%	90.7%

*Property/theft – combination of Robbery, break and enter, and other theft

**Violent crime – Offences against the person, robbery and extortion

Prisoners were asked what was the main language spoken at home when they were growing up. Seventy percent of prisoners reported speaking English at home, 6.2% Vietnamese, 3.6% Italian, 2.5% Serbian, Croatian or other Balkan languages, 1.2% Greek and 1.2% Chinese. Forty (6.2%) of prisoners identified themselves as being of Aboriginal or Torres Strait Islander descent (ATSI). Prisoners reported the highest level of education they started: 5.8% reported primary school, 80.9% was secondary school (including technical school) and 12.9% reported tertiary education. The demographic profile of prisoners in the study was compared to the profile of all prisoners as described in the *Statistical Profile The Victorian Prison System 1995/1996 to 1999/2000* (23) (Table 3). Again due to difference in data collection it is difficult to make direct comparisons.

Table 3. Demographic details of prisoners participating in the study compared with the *Statistical Profile the Victorian Prison System 1995/1996 to 1999/2000*

Group		Study Group	All prisoners - 2000
Language spoken at home*			
	English	70.7%	80.4%
	Vietnamese	6.2%	4.4%
	Other Asian	2.0%	2.8%
	Italian	3.6%	1.1%
	Greek	1.2%	0.7%
	Yugoslav	2.5%	1.9%
ATSI descent		6.2%	4.3%
Highest level of education started**			
	Primary	37 (5.8%)	119 (3.8%)
	Secondary	514 (80.9%)	2847 (90.4%)
	Tertiary	82 (12.9%)	3.9%

- The *Statistical Profile* asks for country of birth as opposed to language spoken at home. Therefore countries selected for speaking English at home were Australia, New Zealand, UK & Ireland, Canada and USA.
- **Data collected in the *Statistical Profile* is different to the study data. Therefore caution should be taken when comparing the educational status of the two groups.

Three hundred and sixty two (57.5%) prisoners were HCV antibody positive. Of those who were HCV antibody positive 337 (93.9%) reported a history of injecting drug use. Four hundred and thirty-six prisoners (68.6%) reported ever-injecting drugs of whom 337 (79.1%) were HCV antibody positive. Fifty five percent of males and 66.7% of females were HCV antibody positive (Table 4).

Table 4. Prevalence of HCV.

Group	HCV Prevalence %	95% Confidence Interval
Total Sample	57.5	53.6 – 61.3
Among injectors only	79.1	75.2 – 83.0
Among non-injectors	11.2	6.8 – 15.7
Among females only	66.7	58.2 – 75.1
Among males only	55.2	50.9 – 59.6
Among female injectors	84.5	77.2 – 91.9
Among female non-injectors	0	0
Among male injectors	77.5	73.0 – 82.0
Among male non-injectors	12.9	7.8 – 18.0

Of the 436 prisoners who reported ever injecting drugs, 311 (74.9%) had injected drugs in the week before entering prison and 337 (80.3%) had injected drugs in the month before entering prison. Three hundred and twenty two (74.9%) prisoners who had ever injected drugs reported injecting drugs whilst in prison. Two hundred and twenty-three prisoners (34.74% of the total number of prisoners participating in the study or 51.15% of prisoners with a history of injecting drug use) had injected drugs this time in prison of whom 43 (20.3%) had injected drugs in prison in the month prior to the study. Nine prisoners who had never injected in the community reported injecting drugs in prison of whom 4 (44.4%) were HCV antibody positive (Table 5). Eighty-nine prisoners who had injected drugs were HCV antibody negative. Fifty-

two of these prisoners reported ever injecting drugs in prison and 26 reported they injected drugs in prison this time.

Table 5. Injecting drugs.

Group	Proportion %	95% CI
Ever injected drugs	68.8	65.0 – 72.4
Injected drugs in the community only	18.4	15.5 – 21.7
Injected drugs in prison only	1.4	0.7 – 2.7
Injected drugs in the community in the week before coming into prison	48.4	44.5 – 52.4
Injected drugs in the community in the month before coming into prison	52.5	48.4 – 56.4
Ever injected drugs in prison	49.7	45.7 – 53.6
Proportion of all prisoners who injected drugs this time in prison	34.7	31.0 – 38.7
Proportion of IDUs who injected drugs this time in prison	51.1	46.3 – 55.9
Injected drugs in the last month in prison	6.7	4.9 – 8.9

Prisoners were asked to identify what crimes had led to this period of incarceration. HCV antibody positivity was associated with property crime (OR 4.68, 95% CI 3.1 – 7.2) and possession of drugs (OR 1.76, 95% CI 1.1 – 2.8). It was not associated with dealing drugs, fraud or crimes of violence (Table 6).

Table 6. Crime/s nominated by prisoner as leading to current period of incarceration.

Group	Injecting drug use	Proportion committing crime %	P value
Property crime	Ever	36.0	
	Never	9.7	<0.001
Possession	Ever	18.9	
	Never	10.3	0.006
Dealing	Ever	15.9	
	Never	13.8	0.50
Fraud	Ever	8.5	
	Never	12.3	0.14
Violence	Ever	44.6	
	Never	33.8	0.01
Other	Ever	21.2	
	Never	30.8	0.01

There was a difference in injecting behaviour for prisoners who had injected drugs in prison compared to when they injected drugs in the community. Prisoners were more likely to share a needle and syringe when inside prison and were less likely to use a brand new needle and syringe. Their injecting in prison was not as safe as when they injected in the community. When asked about the last time they injected drugs in the community 63.6% of prisoners reported *never* sharing with another person, and 1.9% reported sharing with five or more people. This compared with 45.5% sharing with no one and 6.8% sharing with five or more when in prison (Table 7). When asked how frequently they had injected with a brand new needle and syringe 68.6% reported *always* and 2.9% reported *never* using a brand new needle and syringe when injecting in the community in the month before entering prison. This compared with 37.1% who reported *always* and 45.7% who reported *never* using a brand new needle and syringe when injecting in prison in the month prior to the study (Table 8).

Table 7. Comparing sharing practices of those who have injected both in the

community and in prison this time.

Number shared with	Last time injected in the community (%)	Last time injected in prison (%)	P value
> 5 people	4 (1.9)	15 (7.0)	0.01
3-5 people	4 (1.9)	21 (9.8)	< 0.01
2 people	25 (11.7)	33 (15.4)	0.32
1 person	40 (18.7)	28 (13.1)	0.08
No-one	132 (61.7)	99 (45.8)	<0.01
Don't know	2 (1.0)	19 (8.9)	<0.01

Table 8. Comparing use of a brand new needle of those who injected drugs in the community in the month before entering prison and have injected in prison in the last month.

Use of a brand new needle	Last month in the community (%)	Last month in prison (%)	P value
All injections	24 (68.6)	13 (37.1)	<0.01
Most of the time	7 (20.0)	2 (5.7)	0.07
Half the time	3 (8.6)	1 (2.9)	0.3
Some of the time	0 (0)	3 (8.6)	0.08
Never	1 (2.9)	16 (45.7)	<0.01

The association between being HCV antibody positive and sharing of needles, syringes and other equipment for those prisoners who reported injecting drugs this time in prison was examined. There was no association between sharing needles and being HCV positive. There was an increase risk of being HCV antibody positive if people shared their spoons (OR 3.02, 95% CI 1.2 – 7.8). Sharing filters was close to statistical significance (OR 2.66, 95% CI 0.98 – 7.2) but no association was found for sharing other equipment and being HCV antibody positive (Table 9). There was no association between how injecting equipment was cleaned and being HCV antibody positive.

Table 9. The association between HCV and sharing injecting equipment among prisoners who injected drugs in prison this time (unadjusted odds ratios).

Variable		Odds ratio	95% CI
Number of people with who shared a needle and syringe	**No-one**	1.00	
	1-2 people	1.04	0.4 – 2.6
	3 or more	2.58	0.5 – 12.1
Shared a spoon	**No**	1.00	
	Yes	3.02	1.2 – 7.8
Shared water	**No**	1.00	
	Yes	2.02	0.8 – 5.3
Shared filter	**No**	1.00	
	Yes	2.66	0.98 – 7.2
Shared drug solution	**No**	1.00	
	Yes	2.04	0.8 – 5.4

OR – odds ratio. CI – confidence interval

Prisoners who were HCV antibody positive were younger; 29. 8 years compared with 34.2 years ($p<0.001$). They were more likely to have injected drugs (OR 29.95, 95% CI 18.1 – 49.4) and to have been injecting for a longer time period (11.7 years compared with 8.0 years ($p<0.001$)) and to have injected drugs in prison this time (OR 2.92). The crude odds ratio suggested prisoners who were HCV antibody positive were more likely to have a tattoo and to have had a tattoo in prison. This association for having a tattoo in prison remained significant following adjustment (OR 2.68) (Table 10).

Table 10. Association of HCV antibody positive among all prisoners.

Variable	Number HCV +ve (%)	Odds ratio	95% CI	Adjusted OR	95% CI
Age					
35 + years	80 (41)	1.00			
< 35 years	278 (65)	2.67	1.9 – 3. 8		
Duration of injecting					
Never	22 (11)	1.00		1.00	
< 5 years	45 (62)	12.71	6.6 – 24.3	6.70	3.0– 15.0
≥ 5 years	276 (83)	38.98	23.0 – 66.1	13.27	6.5 – 27.0
Time in prison					
≥ 10 months	133 (48)	1.00		1.00	
< 10 months	212 (65)	2.00	1.4 – 2.8	1.61	0.96 – 2.7
Any tattoos					
No	62 (35)	1.00			
Yes	294 (67)	3.79	2.6 – 5.5		
Prison tattoo					
No	240 (50)	1.00		1.00	
Yes	122 (81)	4.36	2.8 – 6.8	2.68	1.4 – 5.1
Professional tattoo					
No	148 (48)	1.00			
Yes	214 (67)	2.21	1.6 – 3.0		
Ever inject in prison					
No	100 (32)	1.00			
Yes	262 (93)	10.88	7.4 – 15.9		
Inject this time in prison					
No	171 (41)	1.00		1.0	
Yes	191 (88)	10.51	6.7 – 16.5	2.92	1.6 – 5.2
Any body piercing					
No	133 (50)	1.00			
Yes	217 (64)	1,82	1.3 – 2.5		
Prison body piercing					
No	321 (56)	1.00			
Yes	41 (79)	2.98	1.5 – 5.9		

OR – odds ratio. CI – confidence interval

Prisoners who reported injecting drugs this time in prison had been in prison longer period, were more likely to report heavy drug use in the month before entering prison, and had a longer duration of injecting drugs. There was no difference if they were sentenced or on remand. Fifty-seven prisoners were taking Methadone; a mean dose of 40mg. There was no association with being on Methadone now or in the past and injecting drugs in prison. Being on Methadone in prison did not increase or reduce the likelihood of a prisoner injecting drugs in prison (Table 11).

Table 11. Association of injecting drugs this time in prison.

Variable	Number (%)	Odds Ratio	95% CI	Adjusted Odds Ratio	95% CI
Methadone Use					
Never	61 (44)	1.00		1.00	
Currently	32 (52)	1.34	0.6 – 3.0	1.51	0.7 – 3.1
Past	119 (55)	1.53	0.9 – 2.6	1.27	0.8 – 2.1
Time in prison so far					
10 + months	100 (62)	1.00		1.00	
< 10 months	109 (42)	0.46	0.3 – 0.7	0.41	0.3 – 0. 7
No. times injected in the month before prison					
Never	23 (29)	1.00		1.00	
≤ 1 per day	39 (50)	2.39	1.6 – 3.7	2.40	1.2 – 4.9
> 1 per day	147 (58)	3.29	2.2 – 4.9	3.47	1.9 – 6.3
Sentenced or remand					
Remand	31 (42)	1.00			
Sentence	189 (53)	1.56	1.0 – 2.4		
Duration of injecting					
< 5 years	29 (40)	1.00		1.00	
≥ 5 years	183 (54)	1.75	1.4 – 2.2	2.17	1.2 – 4.0

The duration of injecting, the time a person had spent in prison this time and having injected drugs in prison this time were independent risk factors for HCV among prisoners who reported ever injecting drugs. Having had a tattoo in prison was independently associated with being HCV positive. Being on a Methadone program or having been on a Methadone program was a predictor of HCV infection amongst IDUs with HCV (Table 12).

Table 12. Association of HCV among injectors only.

Variable	Number HCV +ve (%)	Odds ratio	95% CI	Adjusted OR	95% CI
Age					
35 + years	69 (84)	1.00			
< 35 years	265 (78)	0.67	0.3 – 1.3		
Duration of injecting					
< 5 years	45 (62)	1.00		1.00	
≥ 5 years	276 (83)	3.07	1.8 – 5.3	1.99	1.1 – 3.7
Time in prison					
≥ 10 months	121 (77)	1.00		1.00	
< 10 months	201 (81)	1.23	0.8 – 2.0	1.60	0.9 – 2.9
Any tattoos					
No	56 (72)	1.00			
Yes	278 (81)	1.68	0.96 – 3.0		
Prison tattoo					
No	221 (75)	1.00		1.00	
Yes	116 (87)	2.22	1.2 – 4.0	2.23	1.1 – 4.5
Professional tattoo					
No	135 (78)	1.00			
Yes	202 (80)	1.17	0.7 – 1.9		
Ever inject in prison					
No	75 (67)	1.00			
Yes	262 (83)	2.49	1.5 – 4.1		
Inject this time in prison					
No	146 (70)	1.00		1.00	
Yes	191 (88)	3.21	1.9 – 5.3	2.98	1.6 – 5.4
Methadone					
Never	87 (64)	1.00	1.0	1.00	
Past	57 (93)	3.31	3.1	3.07	1.7– 5.4
Current	182 (85)	8.03	12.6	12.46	2.8 – 55.3

OR – odds ratio, CI – confidence interval

The risk factors associated with HCV for prisoners who reported they had *never* injected drugs were having a tattoo in prison (OR 3.49) and being of ATSI (OR 5.84) (Table 13).

Table 13. Association of HCV among non-injectors only.

Variable	Number HCV +ve (%)	Odds ratio	95% CI	Adjusted OR	95% CI
Time in prison					
≥ 10 months	11(10)	1.00			
< 10 months	15 (16)	1.44	0.6 – 3.6		
Any tattoos					
No	6 (6)	1.00			
Yes	15 (16)	2.91	1.1 – 7.9		
Prison tattoo					
No	17 (9)	1.00		1.00	
Yes	5 (31)	4.36	1.3 – 14.0	3.49	1.0 – 12.0
Professional tattoo					
No	10 (8)	1.00			
Yes	12 (18)	2.53	1.0 – 6.2		
ATSI					
No	17 (9)	1.00		1.00	1.6 – 21.4
Yes	5 (42)	7.02	2.0 – 24.5	5.84	

Forty (6.3%) prisoners identified Vietnamese as the main language spoken at home. Forty seven and a half percent of this group reported ever injecting drugs compared with 70.2% of non-Vietnamese speaking prisoners (p = 0.03). Thirty percent of prisoners who identified themselves as Vietnamese reported ever injecting drugs in prison compared with 51% of non-Vietnamese speaking prisoners (p = 0.01). Identifying oneself as Vietnamese was not associated with an increased risk of being HCV antibody positive. Identifying oneself as Vietnamese was associated with increased odds of being in prison for drug dealing (OR 7.66, 95% CI 3.9 – 14.9) but was associated with decreased odds of being in prison for property crime (OR 0.13, 95% CI 0.03 – 0.5) or crimes of violence (OR 0.46, 95% CI 0.2 – 0.9); it was not associated with being in prison for possession or for violence.

9 Discussion

Over fifty seven percent of prisoners who participated in the study were HCV antibody positive. The study was voluntary and conducted across five Victorian correctional facilities. Therefore not all prisoners were able to participate in the study and not all prisoners elected to participate in the study. Despite this limitation a large number of prisoners participated in the study and the group are similar to the general prison population when comparisons are made with the *Statistical Profile The Victorian Prison System 1995/1996 to 1999/2000 (23).* The differences identified between those prisoners who participated in the study and the total prison populations are unlikely to substantially affect the generalizability of the study results to the overall prison population in Victoria. The Victorian Prisoner Health study conducted by the DOJ this year studied a random sample of 470 prisoners in Victorian Correctional facilities reported the prevalence of HCV antibodies to be 60% in women and 52% in men which is similar to 67% and 55% fin women and men respectively found in our study (24).

It is well recognised that the majority of people who are HCV antibody positive have a chronic HCV infection (25) (26) (27). Therefore a high percentage of prisoners incarcerated in Victorian correctional facilities will have chronic HCV infection and have the potential to transmit the virus to other prisoners if they involve themselves in risk behaviours. The result also means that many prisoners currently require or will require medical advice and access to health care and community supports to manage their HCV.

The study results show that a substantial proportion of prisoners within Victorian correctional facilities have a history of injecting drug use, a history of recent injecting drug use and that they continue to inject drugs in prison. Similar results were found in the Prisoner Health Study that reported 85% of prisoners had taken illegal drugs at some stage in their life and 65% of those who responded reported having injected drugs as compared with 69% in our study (24). The Prisoner Health Study reported that 50% of prisoners responded to the question about injecting illicit drugs in prison of who 35% answered in the affirmative (24). This is less than 50% who reported injecting drugs in prison in this study. The difference could be accounted for by this study being a designed so that prisoners could not be identified by their answers on the questionnaire.

When these prisoners inject drugs in prison they do so in a way that places them at increased risk of blood borne virus infection compared to when they are injecting in the community. There is increased sharing and reduced use of new needles and syringes. Similar risk behaviour has been reported in other prison based studies of BBVs (28) (29). The Prisoner Health Study also reported prisoners sharing needles in prison and using needles that had not been cleaned prior to their use (24).

An important result of this study is that injecting drug use in prison is an independent risk factor for HCV suggesting that the context of injecting represents an increased risk of HCV transmission. A study of IDUs in Berlin reported that a history of sharing syringes in prison was significantly associated with HBV, HCV and HIV infection (30) (21). Injecting drugs in prison has also been associated with the increased presence of HBV antibodies (31).

The high prevalence of HCV amongst prisoners places those prisoners not currently infected at increased risk of contracting HCV particularly if they inject drugs. Forty-two (6.7%) participants who were HCV antibody negative reported injecting drugs in prison. This group are at high risk of contracting HCV whilst in prison.

Prisoners, particularly those who are injecting in prison, are also at risk from HBV and HIV. As discussed earlier, previous studies have reported a higher prevalence of these HBV and HIV in the prison population compared with the community (9) (31) (12). In Victoria there is currently an outbreak of HBV amongst IDUs with the number of acute cases of HBV increasing over the past few years (32). Prisoners with a history of injecting drug use are at particular risk of contracting HBV but other behaviours such as tattooing also place prisoners at risk. There is an effective vaccine available to prevent HBV infection but many prisoners are not vaccinated because this is a relatively expensive vaccine when compared with the prisoners' monthly salary. Hepatitis B vaccine should be available free to all prisoners because it is impossible to accurately identify who is or will be at risk. The current outbreak of HBV in IDUs and the results of this study highlight the need to adopt this policy in prisons.

It should be noted that hepatitis B and hepatitis A vaccine are considered standard care for all people who are HCV infected who have not been previously exposed to these viruses. The health outcome for a person already infected with HCV who develops hepatitis A or B can be severe. This is a simple public health intervention. Offering these vaccines to people who are HCV positive whilst they are in prison benefits the prisoner immediately and has a long-term public health benefit to the community.

HIV transmission continues to be of concern. In Victoria there is concern about the increased transmission of HIV in IDUs from an ethnic Vietnamese background. In this study although prisoners who came from an ethnic Vietnamese background reported less injecting in prison, 30% of this group reported ever injecting in prison (33).

Prisoners who reported injecting frequently in the month prior to entering prison and who had a long history of injecting were more likely to inject whilst in prison. This suggests a person with significant drug use will continue to inject whilst in prison regardless of difficulties they may have accessing drugs and injecting equipment. The major difference is they are more likely to share a needle and syringe or not use a new needle and syringe, placing themselves

and others at risk of blood borne virus infections. Other studies have reported an increase in unsafe injecting behaviour during a period in prison compared with injecting behaviour in the community (28).

There are benefits and dangers to the community when large numbers of IDUs are incarcerated. Incarcerating IDUs places them at increased risk of developing a BBV infection and places others prisoners at risk of infection. The community is also placed at risk because the majority of prisoners are incarcerated for a short time. They return to the community, increasing the risk of transmitting a BBV to the general community. There is a long-term cost to the community because prisoners have the right to appropriate health care. Even if this care is deferred and not provided whilst in prison, the majority of prisoners are likely to seek this care when they return to the community.

Taking Methadone whilst in prison was not shown to reduce or increase the likelihood of a person injecting drugs in prison. Other studies have indicated a reduction in injecting (34) (35) and blood borne virus exposure whilst on Methadone (21). The mean dose of Methadone prisoners reported taking in this study was 40mg, which is a low dose and may account for its lack of impact (36). Also at the time the study was conducted the majority of prisoners who had access to Methadone whilst in prison were those prisoners who were on Methadone in the community prior to entering prison. This suggests the group on Methadone would have a significant history of injecting drug use, which may have affected our ability to see a benefit from Methadone and other drug treatment therapies.

At the time the study was conducted only 62 of 436 prisoners with a history of injecting drugs were receiving Methadone. As outlined earlier, until recently only prisoners who were on Methadone whilst in the community could access this treatment when in prison. A new program is being evaluated where prisoners who were not on Methadone in the community can access Methadone whilst in prison. This approach to Methadone and other drug treatments such as buprenorphine appears to be logical and sensible in the light of the number of current IDUs entering prison. Access to drug treatment may reduce the probability of their injecting unsafely whilst in prison. It is important the trial is carefully evaluated on an ongoing basis to ensure prisoners are able to access drug therapy at useful doses for correct periods of time.

The length of stay in prison affected the likelihood of a person injecting drugs whilst in prison. Prisoners who were incarcerated for less than 10 months were less likely to inject drugs than those who had been in prison for longer periods. Other studies have observed similar outcomes.

This is the first study that was conducted in a prison that has identified tattooing in prison as an independent risk factor for HCV. Tattooing was an independent risk factor both for prisoners who had injected drugs and for prisoners who did not inject drugs. A NSW study reported tattooing as the most likely cause of two prisoners contracting HCV although injecting drug use could not be totally excluded (37). A study of IDUs in New Mexico reported that receiving a tattoo in prison was associated with an increased risk of having HCV and B antibodies, but the study was not conducted in the prisons (19).

This result is important for both prisoners who inject and who do not inject drugs because tattooing may lead to a prisoner becoming infected with HCV or another blood borne virus. Prisoners who do not inject drugs should be educated that they are at risk of contracting a BBV if they get a tattoo in prison. These prisoners may never have considered themselves at risk because in the community the risk from tattooing is minimal.

Prisoners who inject drugs should also be educated that the risk of infection from tattooing was independent of injecting. This means that although injecting drugs in prison increases their risk of contracting HCV so does tattooing in prison, regardless of their having injected drugs in prison. They must be educated that just because they may have put themselves at risk of HCV through unsafe injecting in prison they should not develop a "its too late - I have already injected" mindset and get a tattoo. Having a tattoo also puts them at risk of HCV.

Prisoners of ATSI descent were at increased risk of being HCV antibody positive independent of injecting drug history or tattooing. The reason for this is unclear. Risk factors such as cultural markings were not collected; nor was information about assaults or sharing of razors or toothbrushes. These may be factors that contributed to the higher prevalence of HCV antibodies in this group.

10 Conclusion

The results of this study show that many prisoners in Victorian correctional facilities have HCV antibody. The study results are consistent with the results in the Prison Health Study. Also prisoners who participated in the study are typical of prisoners currently incarcerated in Victorian correctional facilities. The results of this study, although deeply concerning, are not surprising considering the high prevalence of HCV antibodies among IDUs in the community, the fact that high percentage of people we incarcerate have injected drugs and the prevalence of HCV in Victorian correctional facilities was high in 1991-1992 and little has changed within the correctional system that would have led to a reduction in the prevalence of HCV amongst prisoners.

Injecting drug use and blood borne virus transmission is a community public health problem, not simply a prison problem. At the same time it must be acknowledged that prisons can exacerbate the problem and place people at increased risk of contracting a blood borne virus infection. Prisons alter the behaviour of IDUs. IDUs are less likely to inject safely because they do not have access to clean needles and syringes. This increases their risk of contracting a BBV. Prisons also increase the risk of people who are not IDUs contracting a BBV because behaviours such as tattooing are illegal inside Victorian prisons, and the HCV prevalence is so high.

HCV is a serious illness with potentially serious sequelae. Fifty seven percent of the prisoners who participated in this study have been infected with HCV. Time in prison should be viewed as an opportunity to educate people about their illness, about ways to reduce the likelihood of progression and what management options are available to them. For many, the period in prison may be an excellent opportunity to undertake treatment if treatment is necessary and available.

Sixty-nine percent of prisoners have a history of injecting drug use with over 50% having injected drugs in the month before entering prison. The time when an IDU is in prison should be used to educate them about harm reduction associated with drug use, about their general health and the risks of becoming infected with a BBV. Time in prison should be viewed as an opportunity for an IDU to enter a drug treatment program with access to Methadone and buprenorphine where appropriate, regardless of the length of their sentence.

The issues surrounding improved prisoner health care and prevention of transmission of BBVs in prison are complex and sensitive but they can and should be solved. Injecting drug use and HCV and prisons is a public health problem and a public health opportunity. The majority of prisoners are incarcerated for less than 12 months after which they re-enter the community. The entire community, as well as individual prisoners, will benefit if we provide

improved health care, disease prevention and harm reduction to this group whilst they are in prison. It will reduce new BBV infections in prison; it will reduce the probability of prisoners when they exit prison spreading a BBV to a family member or friend. Also the management of HCV infections and other BBVs in an appropriate and timely fashion is likely to reduce future health requirements and costs.

11 Recommendations

- Hepatitis B and A vaccinations should be available to all prisoners free. The Hepatitis C Strategy, that is due for release by the Victorian Government, also makes this recommendation.

  An outbreak of HBV is occurring amongst IDUs in Victoria at this time. As a response to this free hepatitis B vaccines are currently being provided to IDUs in the community. Providing a vaccination program in the prison ensures many people in the IDU risk group are protected.

  Hepatitis A and hepatitis B vaccines are recommended as standard of care for people already infected with HCV. The impact of a second hepatitis infection when already infected with HCV can be severe. Such vaccines should be available to prisoners infected with HCV. Three doses of the combined hepatitis A/B vaccine is given over six months – 0, 1 month and 6 months. The cost of a single dose of combined vaccine is approximately $50.

- Improved access to education and information regarding HCV and other BBVs.

  Accurate information can increase an individual's understanding of their disease, reduces the risk of their transmitting BBVs to others, reduce the risk of their contracting another subspecies of HCV and provide them with information to reduce the risk of their disease progressing. The chaotic lifestyle of some IDUs means that many do not usually focus on health issues. The period in prison should be viewed as an opportunity to offer IDUs this information.

  The Hepatitis C Council of Victoria already deliver awareness and education sessions to prisoners and staff, could provide this information. Nurse educators and doctors with a particular interest in HCV could also be used to provide important information.

  Important issues are

  All prisoners should have formal pre and post-test counselling for HCV. The prison health staff who are administering the test to be trained to perform this task.

  In the community it is recommended as best clinical practice that all people who have HCV infection should be reviewed on at least one occasion by a HCV specialist. Many prisoners want access to such specialist advice. It is important that medical specialist working with prisoners have a sympathetic approach to the management of HCV in IDUs and are sensitive to the issues of prison culture.

- A study should be conducted that examines prisoner access to treatment (interferon and ribavirin) for HCV and the supports that are required when people are receiving treatment for HCV.

  Not all people require treatment for their HCV infection and not all people wish to have treatment or a suitable to have treatment if they are infected with HCV. For this reason it is impossible to give an accurate estimate of the number of prisoners who would seek treatment. Treatment outcomes are improving for those people who do require treatment but current treatments require considerable commitment by the patient. Treatment (depending on a persons genotype) is for 6 or 12 months and most people have side effects related to their treatment. This can range from mild flue like symptoms to marked depression. Therefore it is imperative that adequate supports are provided for people receiving treatment including ongoing medical care, counselling and education about treatment and psychiatric support.

  If a prison were to offer a HCV treatment program that prisoners attended within the prison it would require

  A specialist physician in HCV treatment to attend the clinic. The frequency of attendance would be depend on the number of prisoners receiving treatment

  A nurse educator would need attend the clinic weekly and be available via telephone to answer questions.

  A psychiatrist would need to assess prisoners who are being considered for treatment.

  Facilities to collect blood from prisoners.

  People who are being considered for treatment require a liver biopsy under ultrasound guidance. Such prisoners would need to be able to attend an appropriate clinic outside the hospital.

- Improved access to dietary eduction and advice.

  People manage their illness better when they have control of their health. Interventions such as dietary advice help people gain control of their illness. These interventions are available to the community and should be available to prisoners with HCV. They will improve the management of their illness both inside and outside of prisons. Most people with HCV do not have specific dietary requirements except if they have advanced liver disease. If people did have specific requirements (eg. Low protein, low salt etc) it would be important that such a diet were available to

them. Prisoners should also have access to diets that involve low cholesterol and triglycerides as part of their overall health care.

- Effective education about safe injecting and harm reduction (that is relevant to the prisoners both inside and following release from prison) is required. Part of this education should be offered by individuals/groups who are seen as independent of the prison system.

  Prisoners inject drugs in prison and should be educated about harm reduction within the prison setting. Many will continue to use drugs following their release from prison. The education should include up to date information about "street issues" of the time. A current example of this is the health problems and sequelae of injecting of temazepam and other benzodiazepines e.g. venous thrombosis and thrombophlebitis. The Hepatitis C Council of Victoria and VIVAIDS are currently working in prisons providing this information type of education. Such programs should be expanded.

- Improved access to drug treatment programs and increased flexibility of drug treatment.

  As described earlier, at the time this study was conducted only prisoners who were on Methadone in the community prior to their period of imprisonment could access Methadone or a similar agent whilst in prison. This policy has recently changed and allows prisoners who are incarcerated for more than six months to access drug treatment if required.

  All prisoners who request drug treatment, regardless of the period of their incarceration, should have easy access to drug treatment. The results from this study show that people with a history of injecting drug use will continue to inject drugs whilst in prison and will do so in an unsafe manner. Any intervention that reduces this risk must be seen as beneficial.

- Tattooing and body piercing should be legalised and a trained practitioner should be available to perform tattooing and body piercing in prisons.

  This study shows that getting a tattoo in prison increases the odds of being infected with HCV. Despite being deemed an illegal activity, tattooing continues to occur in prisons. A formal assessment should be conducted about the difficulties of legalising tattooing and body piercing in prisons. The

arguments against providing tattooing and piercing in prison need to be systematically addressed because the current policy is placing people at risk of chronic blood borne virus infections.

The legalisation and availability of tattooing and body piercing needs to be accompanied by an education program that highlights the risk of having a "backyarder" tattoo in prison.

This program could be twinned with tattoo removal programmes.

- There needs to be clear and meaningful differences in the penalties administered to prisoners if cannabis is identified in a urine drug screen compared with having an injectable drug identified.

  The Victorian Prison Drug Strategy introduced hierarchical management measures for drug use in the prisons. A trial is running from March 2002 to March 2003. If a prisoner is found to have used injectable drugs they lose their contact visits for 6 weeks and 3 urine tests. If a prisoner is found to use cannabis they lose their contact visits for 4 weeks and one urine test.

  At a glance the difference in the penalties appears small compared with community standards for penalising people in possession of cannabis and injectable substances. At the completion of the one-year trial it is important to conduct an independent assessment about its success and whether the difference in penalties is large enough to encourage prisoners who are using drugs to use non-injecting drugs. It is acknowledged that there are health issues and prison management issues with the use of non-injecting drugs but HCV, HIV and HBV can have an enormous lifelong impact on a prisoner's health.

- A formal assessment of the benefits, risks and difficulties in providing needle and syringe programs in prisons should be conducted because there is clear evidence that that injecting drugs in prison is an independent risk factor for contracting hepatitis C and that prisoners inject drugs in prison in a manner that puts them at risk of contracting a BBVs.

  This assessment should include issues such as the general management of the prison, staff occupational health, industrial relations, prisoner health and safety

and the legal issues surrounding the providing a program. The legal issues associated with not providing a program should also be examined taking into account the high percentage of prisoners who are IDUs and are hepatitis C positive, the risk of contracting other BBVs whilst in prison and that unsafe injecting occurs in prisons.

The DOJ needs to access the logistics of providing a needle and syringe program in the prison setting. Issues such as who should run such a program and the location of the program within the prison should be examined.

Needle and syringe programs are functioning in prisons in a number of European countries – Switzerland, Germany, Spain and Moldova. These programs vary; there are machine-based exchange of equipment, hand-to-hand exchange by counselling or medical staff and peer-based exchange. The best evaluated programs in Germany and Switzerland show positive effects not only in the reduction of sharing injecting equipment but also in increased referrals to drug rehabilitation programs (38) (39). There is evidence of a reduction in transmission of BBVs amongst prisoners and there are no reported assaults or violent incidents involving syringes (38) (39). These programs should be reviewed as part of the assessment with the strengths and limitations of the programs being acknowledged.

- Bleach programs should be improved whilst the review into needle and syringe programs is being conducted. It is important that prisoners can access bleach in an environment where they do not feel they will be targeted for a drug screen test

  Bleach needs to be used properly if it is going to be effective. This requires an adequate amount of bleach is used and the injecting equipment is immersed in the bleach solution for an adequate time. Prisoners should receive education about the use of bleach.

  It is important to acknowledge that whilst there are reports reduced transmission of BBVs following the introduction of bleach programs, there is uncertainty about the effectiveness of bleach to fully decontaminated HCV from injecting equipment.

- A study that measures the prevalence of BBVs and the risk behaviours leading to the transmission of BBVs should be conducted in Victorian correctional facilities every two to three years.

  This study measured the prevalence and risk behaviours associated with the transmission of the hepatitis C virus in Victorian correctional facilities. A follow up study should be conducted in the next two years that examines the prevalence and risk behaviours associated with the transmission of HBV and HIV and hepatitis C. A follow-up study would have the benefit of evaluating the implementation of the new strategies to reduce risk behaviours in prisons.

  This study was designed so that it was easily repeatable every two to three years. The results of repeat studies can be compared with the original study. The study was developed in close consultation with staff from the Office of the Correctional Service Commissioner and prison management that led a high level of cooperation and good will. The study had minimal impact on the day to day running of the prisons. The use of prisoner peers helped prisoners have a sense of ownership of the study, which in turn encouraged a high level of voluntary participation across a broad range of prisoners. Future studies should use the experience of this study to ensure they too are conducted successful.

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