Global Guidelines for Viral Hepatitis Service Delivery in Prisons

INTERNATIONAL NETWORK ON HEALTH AND HEPATITIS IN SUBSTANCE USERS – PRISONS (INHSU PRISONS)

AUGUST 2024

Authors

Yumi Sheehan[1], Akhil Garg[2], Julia Sheehan[3], Nonso Maduka[4], Frederick L. Altice[5], Filipa Alves da Costa[6*], Sean Cox[7], Ahmed M. Elsharkawy[7], Ehab Salah[8**], Mark Stoové[9,10], Lara Tavoschi[11], Alexander J. Thompson[12,13], Karla Thornton[14], Andrew R. Lloyd[1], Joaquín Cabezas[15,16], Matthew J. Akiyama[17], Nadine Kronfli[2,18], on behalf of INHSU Prisons

[1]Kirby Institute, University of New South Wales, Sydney, New South Wales, Australia

[2]Department of Medicine, Division of Infectious Diseases and Chronic Viral Illness Service, McGill University Health Centre, Montréal, Québec, Canada

[3]The Hepatitis C Trust, London, England, United Kingdom

[4]Bensther Development Foundation, Enugu, Nigeria

[5]Yale University, New Haven, Connecticut, USA

[6]World Health Organization, Regional Office for Europe, Copenhagen, Denmark (consultant)

[7]Liver Unit and National Institute for Health and Care Research Biomedical Research Centre at University Hospitals Birmingham, Birmingham, England, United Kingdom

[8]United Nations Office on Drugs and Crime, Vienna, Austria

[9]Burnet Institute, Melbourne, Victoria, Australia

[10]School of Public Health and Preventive Medicine, Monash University, Melbourne, Victoria, Australia

[11]Department of Translational Research and New Technologies in Medicine and Surgery, University of Pisa, Pisa, Italy

[12]Department of Gastroenterology, St Vincent's Hospital Melbourne, Melbourne, Victoria, Australia

[13]University of Melbourne, Melbourne, Victoria, Australia

[14]University of New Mexico School of Medicine, Albuquerque, New Mexico, USA

[15]Gastroenterology and Hepatology Department, University Hospital Marques de Valdecilla, Santander, Spain

[16]Clinical and Translational Research in Digestive Diseases, Valdecilla Research Institute, Santander, Spain

[17]Department of Medicine, Albert Einstein College of Medicine / Montefiore Medical Centre, New York, USA

[18]Centre for Outcomes Research and Evaluation, Research Institute of the McGill University Health Centre, Montréal, Québec, Canada

FAC works as a public health consultant for the WHO Regional Office for Europe. The author alone is responsible for the views expressed in this publication and these do not necessarily represent the decisions or the stated policy of WHO.

****ES alone is responsible for the views expressed in this publication and these do not necessarily represent the decisions or the stated policy of UNODC.***

Suggested Citation

Sheehan Y, Garg A, Sheehan J, Maduka N, Altice FL, Alves da Costa F, Cox S, Elsharkawy AM, Salah E, Stoové M, Tavoschi L, Thompson AJ, Thornton K, Lloyd AR, Cabezas J, Akiyama MJ, Kronfli N, on behalf of INHSU Prisons. Global Guidelines for Viral Hepatitis Service Delivery in Prisons. August 2024.

CONTENTS

Glossary 4

Preface 5

Introduction 6

Table of recommendations 8

Policy 10

Testing 11
- Viral hepatitis testing 11
- Viral hepatitis testing strategies 11
- Viral hepatitis testing modalities 12
- Repeat testing for viral hepatitis 13
- Peer involvement in promoting testing 13

Treatment 14
- Minimizing time to treatment initiation 14
- Recommended DAAs in prison 15
- On-treatment monitoring 16
- Retreatment 16
- HBV and HDV 16

Continuity of care 17
- Treatment continuity 17
- Linkage to community-based care 17
- Strengthening carceral-community collaborations 18

Prevention and harm reduction 19
- Treatment as prevention 20
- Opioid agonist therapy 20
- Prison needle and syringe programs 21
- Condoms and lubricants 22
- Safe tattooing programs 22
- Disinfectants 23
- Vaccination and post-exposure prophylaxis 23
- Naloxone 24

Education 25

Minority populations and special considerations 27

Monitoring and evaluation 28

Conclusions 29

Funding 30

Methods 30
- Phase 1: Planning 30
- Phase 2: Literature review 30
- Phase 3: Development of the recommendations and draft text 31
- Phase 4: Rating the recommendations 31
- Phase 5: Full document development, stakeholder feedback and consolidation, and endorsement 32

Results 33

Appendix 1: Acknowledgements 34

Appendix 2: Search strategy 37

References 38

GLOSSARY

AASLD: American Association for the Study of Liver Diseases

APRI: AST to Platelet Ratio Index

AST: Aspartate aminotransferase

BBV: Bloodborne virus

DAAs: Direct-acting antivirals

DBS: Dried blood spot

EASL: European Association for the Study of the Liver

EO: Expert opinion

FIB-4: Fibrosis-4

HAV: Hepatitis A virus

HBV: Hepatitis B virus

HCV: Hepatitis C virus

HDV: Hepatitis D virus

HIPED: WHO Health in Prisons European Database

INHSU: International Network on Health and Hepatitis in Substance Users

KOL: Key opinion leader

MINMON: Minimal monitoring

NSP: Needle and syringe program

OAT: Opioid agonist therapy

PNSP: Prison needle and syringe program

PoC: Point-of-care

SVR4: Sustained virological response at 4 weeks

SVR12: Sustained virological response at 12 weeks

TasP: Treatment as prevention

UNODC: United Nations Office on Drugs and Crime

WHO: World Health Organization

PREFACE

These Guidelines have been prepared by the International Network on Health and Hepatitis in Substance Users – Prisons (INHSU Prisons*) Executive Committee members, alongside clinical, consumer, public health, and organizational stakeholders and researchers with a shared commitment to enhance best practices in viral hepatitis service delivery for people in prisons globally.

The need for Global Guidelines to articulate best practices in viral hepatitis service delivery in prisons was identified and prioritized by the INHSU Prisons Executive Committee at the INHSU Prisons Third Annual Workshop in 2023 (Geneva, Switzerland). The Guidelines aim to make recommendations for best preventive and clinical practice standards in viral hepatitis service delivery in the prison sector based on available evidence and are intended to inform policymaking by national and regional government departments with responsibility for the provision or oversight of prison health services. By outlining recommendations, we hope to galvanize international efforts to include people in prison in national elimination efforts and coordinate a global approach to viral hepatitis elimination in prisons with consistent policy, practice, and reporting. The recommendations have been developed following a systematic review of the literature and apply to both adult and juvenile prisons and migration detention centres. The recommendations are meant to be implemented in, and adapted to, local settings and contexts. The Guidelines should be considered a 'living document' and will be updated based on emerging international literature.

While the Guidelines have been reviewed and endorsed by several key stakeholder organisations, they may not reflect the full extent of all stakeholder perspectives. Although the Guidelines aim to guide standards in viral hepatitis service delivery in the prison sector, they do not take into consideration the many social and structural determinants of health which contribute to the marked disparities in health status, health-related outcomes, and access to health services by people who are incarcerated globally.

**a special interest group of the International Network on Health and Hepatitis in Substance Users (INHSU)*

Healthcare in prisons should be equivalent to that in the community

INTRODUCTION

There are over 11.5 million individuals in prison (hereafter referred to as 'people in prison') at any one time,[1] with a global incarceration rate of 140 per 100,000 population, and national rates ranging up to 629 per 100,000 in the USA.[2] Each year, an increasing number of men and women spend time in prisons, jails, and other closed settings - the vast majority of whom return to the community within a relatively short timeframe.[1,3] The population of people in prison is heavily over-represented with the most marginalised groups from the community, including those from poorer socioeconomic strata, immigrants and other foreign nationals, those with poor mental health, and those with high rates of substance use and associated infectious diseases.[4] Chronic viral hepatitis caused by hepatitis B virus (HBV) and hepatitis C virus (HCV) constitutes the major health burden of infectious diseases among people in prison globally.[5]

Rule 24 of the United Nations Standard Minimum Rules for the Treatment of Prisoners (codified as the Mandela Rules) defines the equivalence of care principle: that "prisoners should enjoy the same standards of health care that are available in the community, and should have access to necessary health care services free of charge without discrimination on the grounds of their legal status".[6] However, there are multiple challenges to health care implementation in the prison sector, including competing correctional and health priorities, logistical constraints such as frequent movements of people in prison and limited space for clinical service provision, as well as knowledge and attitudinal barriers among correctional and healthcare providers and those who are incarcerated.[7] In addition, prisons are unique in physical structure, and people in prison form a distinct micro-society with their own rules and regulations.8 The environment features overcrowding, high exposure to violence and drugs, lack of purposeful activity, separation from family networks, and emotional deprivation.[8]

As there are close associations between injection drug use, incarceration, and bloodborne virus (BBV) infections, the prevalence of chronic HBV and HCV in the prison sector is substantially higher than in the general population, estimated to be 4.8% for chronic HBV,[5,9] and between 13-26% for HCV (prior exposure; anti-HCV antibody positive).[5,10,11] Although available data is more limited, the incidence of new HBV and HCV infections in prisons is also high, with ongoing injection drug use and the sharing of limited and unsterile injecting equipment being key risk factors.[10,12–16]

In 2016, the World Health Organization (WHO) set global viral hepatitis elimination targets, including treating 80% of people infected with HCV or HBV, reducing HCV and HBV incidence and liver-related mortality by 90% and 65% respectively, and providing HBV vaccination to 80% of individuals.[17] The 2022-2030 Global Health Sector Strategy on Viral Hepatitis updated these targets to incidence rates of 5 per 100,000 for HCV and 2 per 100,000 for HBV, and disease-specific mortality of 2 per 100,000 for HCV and 4 per 100,000 for HBV. Most countries are not on track to meet HBV and HCV elimination targets by 2030.[18] This is in large part due to the omission of people in prison in global viral hepatitis elimination efforts.[19–21] For example, only 23 countries globally prioritize people in prison in their national hepatitis plans.[22]

It is clear that well-resourced and prison-adapted health care for HCV and HBV is efficacious in carceral settings.[23,24] While many people in prison remain susceptible to hepatitis A virus (HAV) and HBV, availability of HAV and HBV vaccination is highly variable globally high rates of immunisation coverage have been reported in this setting in some countries.[25–27] Furthermore, the implementation of evidence-based harm reduction services, which are commonplace in the community, including opioid agonist therapy (OAT) and needle and syringe programs (NSP), has stalled in prisons[28–30] despite being endorsed by the United Nations.[31–33] As these interventions are not consistently available or reliably implemented across the prison sector, there is an urgent need to build the evidence base for OAT and NSP in reducing HCV and HBV incidence in prisons.

In the context of WHO global elimination goals for viral hepatitis,[17] prisons and people in prison have been identified as key priorities for national and global elimination efforts.[20,34] To deliver on the elimination goals for HCV and HBV, national commitments for the prison sector in the domains of policy, testing, treatment, continuity of care, prevention and harm reduction, education, monitoring and evaluation, and consideration of minority populations, are needed.

Prioiritisation of people in prison is needed to meet global HBV and HCV elimination targets by 2030

The objectives of these Guidelines are:

1. To present a critical analysis of the evidence supporting viral hepatitis service delivery for people in prison - both for the individual, as well as for global elimination efforts.

2. To make recommendations for best practice standards in viral hepatitis service delivery in the prison sector.

TABLE OF RECOMMENDATIONS

Table 1: Recommendations and GRADE rating

	#	Recommendation	GRADE
Policy	1	All stakeholder organisations including health and custodial agencies should have a policy regarding services for prevention, testing, and management of HAV, HBV, and HCV among people in prison.	D1
	2	All stakeholder organisations including health and custodial agencies should have a plan for the implementation of services for the prevention, testing, and management of HAV, HBV, and HCV among people in prison.	D1
Testing	3	Universal, opt-out testing for HCV (antibody and/or RNA) and HBV (surface antigen, core and surface antibody) should be adopted upon entry for all newly incarcerated people.	A1
	4	Testing for HCV and HBV should ensure a rapid turn-around-time (such as with point-of-care and reflex testing).	A1
	5	Re-testing for HCV should be offered at least annually for all those who remain incarcerated and earlier for people who disclose risk factors or request testing.	D1
	6	Peers should be involved in improving engagement and service delivery along the viral hepatitis care cascade for people in prison.	C1
Treatment	7	Universal access to DAAs should be available to all people in prison with HCV infection, in alignment with community standards and international guidelines.	A1
	8	Evaluation for DAA initiation should be done in the shortest time possible.	B1
	9	First-line pan-genotypic DAAs for treatment-naïve individuals with compensated HCV-related liver disease should be used.	B1
	10	Pre-treatment evaluations by a specialist physician should be reserved for patients with decompensated cirrhosis, hepatocellular carcinoma, HBV co-infection, or complex drug-drug interactions.	EO
	11	People in prison should have repeat HCV RNA testing at 4 weeks post-treatment to determine cure.	B1
	12	Universal access to HBV management should be available to all people in prison with chronic HBV infection, in alignment with community standards and international guidelines.	B1
Continuity of care	13	For people who are newly incarcerated or transferred from another facility while on DAAs and/or HBV antiviral therapy in the community, treatment continuation should be facilitated.	C1
	14	People released from prison while on DAAs should be provided with the remainder of their treatment course at release.	D1
	15	People released from prison while on HBV antiviral therapy should be provided with a sufficient supply at release.	D1
	16	People with chronic viral hepatitis should be linked to community-based care at release.	A1
	17	For people who are on OAT during incarceration, continuity of OAT at release and linkage to a community OAT prescriber should be facilitated.	A1
	18	Jurisdiction-wide electronic medical records should be implemented to ensure confidentiality and facilitate transfer of medical information within the prison system and between prisons and community providers.	C1

	#	Recommendation	GRADE
Prevention and harm reduction	19	High coverage HCV treatment should be implemented to promote a treatment-as-prevention effect.	B1
	20	All people in prison who are on OAT in the community, or who request OAT and are deemed eligible, should receive access to OAT within 24 hours of admission or request.	B1
	21	High coverage prison needle and syringe programs should be implemented, monitored, evaluated, and refined as needed.	C1
	22	Condoms and lubricants should be easily accessible to the entire prison population.	D1
	23	Safe tattooing programs should be implemented and evaluated.	D1
	24	Opt-out HBV vaccination should be offered to anyone who does not demonstrate evidence of immunity upon entry.	B1
	25	HAV vaccination should be offered to anyone in an outbreak setting who does not demonstrate evidence of immunity.	C1
	26	Accelerated HBV vaccination protocols should be favoured over the standard schedules for people in prison.	C1
Education	27	Whole of sector, prison-specific education programs for HBV and HCV should be implemented.	C1
Minority populations and special considerations	28	The specific needs of women, transgender people, ethnic/racial minorities, people who use drugs, men who have sex with men, and sex workers should be considered in viral hepatitis care.	C1
Monitoring and evaluation	29	Monitoring of the prevalence and incidence of chronic viral HBV and HCV in prisons should be undertaken at least as frequently as in the general population.	C1
	30	Monitoring and evaluation of the provision and uptake of viral hepatitis testing, treatment and prevention services in the prisons should be undertaken at least as frequently as in the general population.	C1

POLICY

National health policies and plans play a key role in defining a country's vision, policy directions, and strategies for ensuring the health of its population. Such policies provide a framework for managing the complex range of issues needed to improve health outcomes, including those related to the United Nations Sustainable Development Goals and to national health priorities.[35] International clinical practice guidelines recommend testing and treatment of people in prison for HCV given the high burden of disease in this population,[36–38] whereas guidelines for HAV and HBV have no such recommendations for the prison sector, probably due to the lower prevalence, although evidence is still needed.[39–42]

Only a small minority of countries worldwide have national or jurisdictional policies in place with specific recommendations for viral hepatitis service delivery in the prisons, and very few countries have implementation plans for those policies and budgets allocated.[43–47] Consequently, hepatitis service delivery in prisons varies widely in scope and quality, both between and within countries.[48,49] With regard to HCV in particular, there is growing recognition that without a well prioritized and systematic focus on hepatitis prevention, testing, and treatment for people in prison, national and global efforts to reach elimination by 2030 will not be achieved.[20,50–52]

Without a well prioritized and systematic focus on hepatitis prevention, testing, and treatment for people in prison, national and global efforts to reach elimination by 2030 will not be achieved

TESTING

The implementation of testing policies and strategies for HAV, HBV, and HCV in the prison sector is critical to scale-up of treatment and to achieve WHO elimination targets. Prisons and people in prison have been identified as priority settings and populations, respectively, in WHO strategies for focused testing efforts.[31,53] Prisons represent a setting where high-risk and underserved populations can efficiently access testing. Testing in prisons can be logistically challenging due to the high turnover of the population (both within prisons, and between prisons and surrounding communities) and short incarceration durations. Therefore, efficiencies and timeliness through the care cascade are critical.

Table 2: Viral hepatitis testing

Virus	Test	Significance	Indications
HAV	HAV IgG	Immunity	High-risk individual* Outbreak setting
	HAV IgM	Acute infection	Symptoms
HBV	HBV surface antibody (HBsAb)	Immunity	Upon entry
	HBV surface antigen (HBsAg)	Chronic infection	Upon entry
	HBV core antibody (HBcAb)	Prior exposure	Upon entry
HCV	HCV antibody (HCV Ab)	Prior exposure	Upon entry (if no prior history of HCV infection) Annually or upon request thereafter
	HCV RNA	Active infection (acute or chronic)	Upon entry (if prior history of HCV infection)
HDV	HDV IgG	Chronic infection	If HBsAg is positive

HAV: hepatitis A virus; HBV: hepatitis B virus; HCV: hepatitis C virus; HDV: hepatitis D virus; Ig: immunoglobulin
*See page 12 for indications

Viral hepatitis testing

The different tests for viral hepatitis, their significance, and indications are listed in Table 2. All individuals with acute or chronic viral hepatitis should undergo liver function tests.[42]

Viral hepatitis testing strategies

The optimal timepoint for testing is on admission to prison, which is typically defined as within 24 hours of entry, based on studies of HIV in the prison population.[54] There are several approaches to prison-based screening for viral hepatitis on admission. The first is 'risk-based screening', whereby an individual is tested only after being identified as having risk factors for viral hepatitis elicited by a healthcare worker. While this is a common screening approach in prisons, it is potentially marred by key issues that hinder its effectiveness in engaging all those in need of testing. For HCV and HBV, this most commonly relates to a need to disclose sensitive information such as a history of injection drug use, which can contribute to low uptake of testing in prison due to the potential for stigma and discrimination.[55–57] Further, as imprisonment is an independent risk factor for BBV infections,[58] all people in prison, not only those with disclosed risk factors, should be offered testing. The second is 'universal opt-in screening', where all individuals are offered testing on entry to prison and choose whether they would like to undergo testing or not. This approach is associated with variable uptake in prison, but also poses a substantial risk of underdiagnosis.[56] The third is 'universal opt-out screening', where all individuals

undergo testing upon entry to prison unless they explicitly decline. With this approach, it is important that all individuals are properly informed of their right to decline testing. This screening approach is effective at achieving high testing uptake,[59–62] is acceptable to people in prison,[63–65] is reported to reduce inequity of testing,[56,66] and is cost-effective.[67] Universal opt-out testing upon entry has been shown to be more effective than opt-in or risk-based screening.[56,57] Although the evidence is more robust for HCV than HBV, it points towards 'universal opt-out' testing as the favoured approach for both HCV and HBV screening in prisons given its potential to maximise testing numbers and case detection. Individuals with chronic HBV should be screened for hepatitis D (HDV) virus (Table 2).

Given the high prevalence of lifetime immunity against HAV in low- and middle-income countries in particular, and the typically low HAV prevalence in high-income countries,[68] opt-out testing upon entry for HAV should be adopted across all prisons for all newly incarcerated people who are at high-risk for HAV infection or severe disease. These include: men who have sex with men, people who use injection or non-injection drugs, people who have occupations risk for infection (e.g. food handlers), people experiencing homelessness, and people with HIV or with chronic liver disease, including chronic HBV and HCV infection.[69–71]

Viral hepatitis testing modalities

Traditional testing modalities for viral hepatitis involve sample collection via venipuncture – typically collected on-site in prison. Samples are usually sent to an external laboratory for analysis. The main advantage of venipuncture-based testing is the possibility to order multiple tests at once (e.g., integrated BBV and sexually transmitted infection testing). However, due to the need for specimen transfer to an off-site laboratory, turnaround times for test results can be up to several weeks, delaying or preventing treatment uptake in prison due to the likelihood of transfer or release.[49] Where testing occurs via traditional venipuncture-based methods, reflex testing should be considered. With reflex testing, in case of HBV surface antigen positivity, the sample is automatically tested for HBV DNA, HBV e-antigen, HDV antibody, and HDV RNA; similarly, positive samples for HCV antibody are automatically tested for HCV RNA.[72] This reduces the need for repeated blood draws, ordering of tests, and waiting for results, all of which act as barriers to care engagement. However, costs associated with collecting an extra vial of blood (needed for reflex testing) and the willingness of laboratories to store samples and undertake sequential testing should be considered, especially in resource-limited settings.

Recent advances in diagnostics by way of point-of-care (PoC) tests have revolutionized testing for BBVs. PoC tests offer simple sample collection methods (whole blood finger-prick or saliva versus venous blood draw), reduced time to result (between 1-60 minutes), and the possibility for sample collection in non-clinical settings.[73] Several PoC tests have high sensitivity and specificity, comparable to laboratory testing.[74] The availability of PoC testing is of particular relevance to prisons given the need for efficiencies with testing approaches, rapid availability of results and provision of diagnosis, followed by linkage to care for treatment. Further, PoC testing is an attractive alternative to venous blood sampling among people who inject drugs in whom venous access may be difficult.[75] Several interventions that incorporate PoC testing for BBVs have demonstrated increased testing and treatment uptake, reduced time to treatment initiation, high acceptability, and cost-effectiveness in prisons.[59]

Another testing modality with particular relevance in prisons is dried blood spot (DBS) testing. DBS testing has the benefits of a simplified sample collection (whole-blood finger-prick sample) and the possibility for multiplex BBV testing;[76] however, samples still require processing at off-site laboratories leading to delayed time-to-result. While one study found no impact of DBS testing on increasing

diagnoses in prisons,[77] others have demonstrated the feasibility of DBS testing in improving testing and treatment uptake in prisons.[75,78]

Given rapid testing pathways are critical in prison settings, simplified testing and diagnostic pathways including PoC testing should be prioritised where possible.[79] It is important to note that the licensing of PoC and DBS tests for diagnostic use varies by test and country, with some remaining for research use only in status. Furthermore, costs remain an important consideration as these tests are classically several-fold more expensive when compared to venipuncture, and are an important consideration in both resource-limited as well as high-income countries.[67,80]

Repeat testing for viral hepatitis

Although the optimal timepoint for testing is upon entry to prison, surveillance via regular testing during incarceration is also important, in particular for HCV among individuals with ongoing exposure to risk behaviours (e.g. sharing unsterile injecting or tattooing equipment, fights involving blood, etc.) to detect incident or re-infections. There is no literature to determine the optimal frequency of re-testing for HCV during incarceration but at least one annual screening is recommended for all people who inject drugs in the community.[81] In the United Kingdom, a three-monthly re-testing approach is employed for people with ongoing risk factors in prisons (personal communication, Sean Cox), whereas in Australia, annual re-testing is recommended.[50]

In prisons with a high HCV prevalence, mass testing or 'High Intensity Test and Treat (HITT)' campaigns, where the entire prison population is tested en masse during a designated period of time (typically over days-weeks), may also play a role in case detection. Pilot studies suggest that such testing campaigns result in high testing and treatment uptake[82,83] and are cost-effective.[84] HITT campaigns should supplement, rather than replace, routine testing on admission. The incidence of HBV in prisons is low[14] and, where HBV vaccination coverage is high, repeat testing for HBV is unlikely to be required. Similarly, for HAV, given the high rates of immunity, in particular in low- and middle-income countries, and the typically low prevalence and incidence in high-income countries, repeat testing for HAV is not recommended.

Peer involvement in promoting testing

In addition to nurses, peers (defined as individuals with lived experiences of incarceration and/or viral hepatitis) can play an important role in supporting engagement with viral hepatitis testing. Peers can promote participation, offer education, and accompany patients to health care visits, as well as perform testing, all while ensuring a non-stigmatising environment. Prison-based interventions involving peers have been demonstrated to improve HBV and HCV testing uptake and subsequent engagement in the care cascades[62,85,86] and are a cost-effective strategy for prisons.[87] Furthermore, the recent availability of WHO prequalified HCV self-tests, specifically designed for use by lay users (which may include peers), enables low- and middle-income countries to have safe and affordable self-testing options.[88] As such, peers should be involved in supporting testing, where available.

Simplified testing and diagnostic pathways including PoC testing should be prioritised

In alignment with community standards and international guidelines, people in prison with chronic HCV should receive access to DAAs

TREATMENT

The advent of direct-acting antivirals (DAAs) has revolutionized the clinical management of HCV, offering cure rates surpassing 95%.[89] Provision of DAAs in prisons has been shown to be effective.[90] Several prison-based studies have demonstrated high treatment uptake of DAAs among those diagnosed with HCV,[59,91–93] particularly when delivered in a streamlined model of care. DAAs are also considered highly acceptable among people in prison[94,95] and scale-up of DAAs in prisons is generally supported by key stakeholders.[96,97] Furthermore, given the high cure rates, treating people for HCV can also prevent forward transmissions and lead to lower HCV incidence.[98] In alignment with community standards and international guidelines,[99] people in prison with chronic HCV should receive access to DAAs equivalent to that available outside carceral settings. While this is in keeping with the Nelson Mandela Rules, many countries continue to have limited access to DAAs due to limited funding (most of whom rely on the Global Fund), meaning that a small fraction of those in need are accessing treatment.

Minimizing time to treatment initiation

Underpinning HCV treatment protocols is a minimum work-up to expedite treatment uptake and to minimize loss to follow-up. This work-up includes confirmation of chronic infection via HCV RNA testing, assessment for HIV/HBV co-infection, serum biomarker- or fibro-elastography-based assessment of liver fibrosis, and a review of potential drug-drug interactions and prior DAA treatment history. With the availability of pan-genotypic DAAs, HCV genotype testing is no longer required before treatment initiation as it will unlikely alter treatment recommendations.[100] A recent prison-based study demonstrated that the AST-to-platelet ratio index (APRI) and Fibrosis-4 (FIB-4) scores reliably excluded cirrhosis (with APRI and FIB-4 cut-offs of 1.0 and 1.45, respectively), thereby minimizing the need for transient elastography.[101] These findings further contribute to simplified cascades of care, whereby transient elastography would be considered unnecessary for the majority of people in prison.

Simplifying and streamlining the pre-treatment clinical evaluation and workup within a single visit has been shown to be associated with high treatment uptake in prison and high levels of acceptability among people in prison.[59,65,102] Decentralisation and integration of testing, care, and treatment in prisons (to minimize the need for people in prison to be transferred to community hospitals for specialized care) has been shown to be effective.[103] **Given short incarceration durations and challenges with movements in prison systems, ensuring individuals can initiate treatment immediately after diagnosis is critical. Therefore, evaluation and initiation of DAAs should be done in the shortest time – within a single visit – where possible.**[104]

Recommended DAAs in prison

In keeping with HCV international guidelines (EASL[36] and AASLD[37]), first-line DAAs sofosbuvir/velpatasvir or glecaprevir/pibrentasvir are recommended for treatment-naïve individuals with compensated liver disease in prison. In cases of non-response due to virological relapse, sofosbuvir/velpatasvir/voxilaprevir is recommended for people with compensated liver disease. Individuals with acute HCV infection should be initiated on DAAs without delay to minimize onward transmission or loss to follow-up.[105] Individuals with decompensated cirrhosis, hepatocellular carcinoma, HBV co-infection, complex drug-drug interactions,[106,107] and/or two previous relapses should be linked to specialist care prior to treatment initiation.[108]

Several models of care, focused on decentralized care and task-shifting away from specialist physicians have been shown to be highly effective and acceptable for HCV care delivery in prisons.[103] International data demonstrate that nurse-led prison-based HCV management, with limited specialist input, is effective.[93,109,110] Primary care-led models of care, which may include nurse practitioners or general practitioners should therefore be an integral part of HCV care in prison, supported if necessary by remote telehealth[111–114] to facilitate the assistance of specialists such as gastroenterologists/hepatologists or infectious diseases physicians.[103] Where there are concerns regarding adherence, directly observed therapy should be prioritized.[115]

Several models of care, focused on decentralized care and task-shifting away from specialist physicians have been shown to be highly effective and acceptable for HCV care delivery in prisons

Given its high positive predictive value for SVR12 (>99%), repeat HCV RNA testing should be undertaken at four weeks post-treatment (SVR4) in prisons globally

On-treatment monitoring

Global data from individuals undergoing treatment for chronic HCV suggested that a minimal monitoring (MINMON) approach was not only safe, but achieved sustained virologic response at a rate comparable to that with standard monitoring.[116] Given the findings of this study, simplified HCV treatment approaches (for example, no scheduled visits or laboratory monitoring while on treatment) are recommended for HCV treatment-naïve adults without cirrhosis and for HCV treatment-naïve adults with compensated cirrhosis,[99] an approach that likely holds similar applicability in carceral settings.

A critical component of the treatment trajectory is confirmation of cure, defined as sustained virologic response or SVR. Whereas current international guidelines recommend repeat HCV RNA testing 12 weeks post-treatment (SVR12),[117] there are important logistical challenges that exist in prison (e.g., short sentence durations, unpredictable releases or transfers, etc.) that underscore the importance of documenting cure as soon as possible. Given its high positive predictive value for SVR12 (>99%),[118–121] repeat HCV RNA testing should be undertaken at four weeks post-treatment (SVR4) in prisons globally.

Finally, individuals with cirrhosis should receive lifelong hepatocellular carcinoma screening and portal hypertension screening and management as per current guidelines, even if ultrasonography is not available in the carceral setting.[106–108,122]

Retreatment

Re-infection rates, where studied, have been shown to be high in prison due to limited harm reduction services and ongoing high-risk behaviours among people who inject drugs in prison.[123–126] In the absence of high coverage OAT and prison NSPs, as is the case in most countries globally, enhancing post-treatment surveillance and ensuring unrestricted access to retreatment are essential for HCV elimination to occur in prison. HCV international guidelines (EASL[36] and AASLD[37]) should be used to guide healthcare providers for retreatment options, in alignment with community standards.

HBV and HDV

In contrast to HCV, there is no evidence to guide the management of HBV and HDV in prisons. We therefore recommend universal access to HBV/HDV management for people in prison, in alignment with community standards and international guidelines.[42,127–130]

Reinfection should not be a barrier to retreatment

CONTINUITY OF CARE

Treatment continuity

Treatment for HCV in prison is highly effective for those who spend enough time incarcerated to complete their treatment course. For people diagnosed with HCV in prison, length of stay has been found to be strongly associated with the opportunity to link to care, with those who are incarcerated for longer periods having an increased chance of being seen by an HCV provider than those with shorter incarceration periods.[131] Prison-based HCV treatment achieves similar outcomes to community-based treatment (see Treatment section); however, data are limited on outcomes for those who are released or transferred while on treatment. In the pre-DAA era, positive treatment outcomes were negatively associated with transfer or release during treatment.[132] In the DAA era, while outcomes appear to be better, patients who completed treatment in prison were still more likely to achieve SVR compared to those who were released on treatment.[133] While the cascade through incarceration is often unpredictable, HCV treatment can be effectively provided to people in prison and has been found to be cost-effective.[109,134,135] For individuals who are incarcerated while on viral hepatitis treatment, continuation should be facilitated in a timely manner to avoid treatment interruptions and discontinuations.[133]

In some countries, people in prison who are on DAAs but who have not yet completed treatment are provided with the remainder of their treatment course on release. The effectiveness of this strategy was established in the context of HIV, where provision of a limited/sufficient supply of antiretroviral therapy to people on release from prison was associated with high probability of linkage to care.[136] Although not widely utilized in prisons globally, this strategy has the potential to similarly facilitate or encourage continuity of treatment for both HBV and HCV post-release, ideally in combination with linkage to community-based care.

Linkage to community-based care

Data are limited on effective strategies to promote continuity of care on release.[137] Linkage to community-based care is crucial to ensure people living with chronic HBV or HCV remain engaged with care following release from prison. Linkage to community-based care should be prioritized regardless of whether treatment was initiated during incarceration or not. Although understudied, implementation challenges and barriers to care for HBV are anticipated to be similar to those associated with HCV.[138] Similarly, people who are identified in prison as susceptible to HAV or HBV and in need of vaccination should be linked to care on release.[139]

Several barriers complicate linkage to community-based care following release from prison, such as unstable housing, poor social support, experience of stigma and discrimination in healthcare settings, and return to or continuation of substance use.[140,141] **Adequate discharge planning, case management, facilitated referral and appointment scheduling, social support, having an existing primary care provider, and receipt of OAT are known facilitators for continuity of care post-release.**[137,138,142] This has been evidenced in the HIV literature, where holistic HIV-focused models that include discharge planners or care navigators enhance continuity of care after incarceration.[143] Such programs can be leveraged to facilitate connection to community care including primary care, substance use treatment, and providers who can initiate or continue antiviral treatment and assess SVR after HCV treatment following release. These programs tend to be most effective when they include dedicated care navigators,[144,145] with peer support from people with lived experience being particularly effective for supporting linkage to community-based

HCV care,[139] which is in keeping with a recent WHO recommendation to support the engagement of key populations in viral hepatitis care.[31]

Linkage to OAT providers also plays an important role in ensuring continuity of care upon release.[146–153] In the post-release period, OAT provision can improve personal health outcomes, such as overdose reduction, as well as public health outcomes, such as the prevention of BBV transmission. The importance of retention on OAT after release from prison is underscored by higher rates of primary health care use and medication dispensing among people with complete or partial OAT use post-release,[154,155] suggesting that access to OAT post-release may have a collateral benefit in supporting broader health service utilization, including engagement in HCV care and higher uptake of HAV and HBV vaccination.[156] Additionally, continuity of OAT should be facilitated for those who are incarcerated while on OAT (i.e. engaged in community-based programs), ideally within 24 hours of admission into prison.

Strengthening carceral-community collaborations

In the high-volume, quick-turnover remand settings, cooperation between prison and community healthcare providers is necessary to support continuity of care for patients. For example, if a person is released from prison before receiving test results, close collaboration of prison and community health care systems to follow-up on the test results and promote engagement and retention in care.[157] Inclusion of prisons in jurisdiction[b]-wide electronic medical records helps ensure privacy and facilitates the transfer of medical information for those who are released and transferred, although such arrangements are rare.[133,158,159] Strategic and comprehensive follow-up procedures including frequent scheduled interactions with patients and their secondary contacts can improve retention and potentially minimize loss to follow up.[158] These community entities may be essential for ensuring those released prior to receiving their test results are provided with the results in the community; initiating or continuing antiviral therapy; assessing and confirming cure; as well as providing counseling, substance use treatment, and other supports. Finally, although less is known about HCV incident or re-infection rates following release from prison,[160] close monitoring by community providers, with repeat testing as needed, and above all, access to a comprehensive package of harm reduction services, will help contribute to viral elimination efforts.

Cooperation between prison and community healthcare providers is necessary to support continuity of care for patients

[b]Only a minority of prison systems globally are run by a national authority – most are run by state, regional or local authorities, hence the term 'jurisdiction' is used in this document to encompass these varied corrections organizational structures.

Risk-taking in prisons is extraordinarily high with increased sharing of scarce injecting equipment, underscoring the need for high coverage harm reduction interventions

PREVENTION AND HARM REDUCTION

The prevention of viral hepatitis transmission is an essential component of prison health care and WHO global elimination goals. The transmission of HBV and HCV in prisons occurs primarily through sharing of unsterile injection equipment and tattooing, both of which can be prevented with OAT, prison needle and syringe programs (PNSPs), and safe tattooing programs. While global heterogeneity creates uncertainty around estimates of the prevalence and patterns of injection drug use in prisons,[161] a growing body of evidence points to the continuation of injection drug use among many people in prison,[161–164] and its association with HCV infection and post-treatment re-infection.[58,165–167] While some people reduce or cease injection drug use altogether due to decreased access and/or the increased costs of drugs in prison,[168] others begin injecting for the first time.[169] Irrespective of the frequency of within prison injection drug use, risk -taking is extraordinarily high with increased rates of sharing of scarce injecting equipment, driving transmission of BBVs, underscoring the need for high coverage and comprehensive harm reduction interventions.[16,154,166,170]

Harm reduction services for people who inject drugs are more readily available in the community compared to prisons despite a global commitment to the fundamental principle of equivalence of health care.[6,29,171] A systematic review of 190 countries found that, while the global coverage of OAT and NSPs for people who inject drugs in most countries remains low, there were particularly notable disparities in the availability of PNSPs (92 countries offer community-based programs vs. nine that offer prison-based programs).[172] Moreover, of the 11 countries classified as having high needle and syringe coverage in the community, only one had implemented PNSPs.[173] Holding UN member states accountable to the Mandela Rules by ensuring equivalence of harm reduction services is a priority for viral hepatitis elimination in prisons.

Treatment as prevention

Initially proposed in the context of combination antiretroviral therapy for HIV,[174] treatment-as-prevention (TasP) involves population-wide scale-up of effective treatment as a tool for limiting transmission in a particular setting. A recent landmark study conducted in four Australian prisons **(the SToP-C study) demonstrated a 48% reduction in HCV incidence with the scale-up of DAAs, establishing TasP as an effective and feasible prevention tool in prisons.**[98] Modelling studies have similarly demonstrated the prevention benefits of scaling up DAAs in prisons.[175,176] However, valid concerns exist about the potential futility of DAAs in a context of high rates of risky behaviours and ongoing transmissions, in addition to limited access to harm reduction services. This, too, was observed in the SToP-C study where the effect of TasP on the incidence of re-infection was much lower among those who reported recent injection drug use and needle/syringe sharing.[124] This suggests, that while TasP is effective, high coverage OAT and PNSP, in combination with the scale-up of DAAs, is essential to mitigate HCV transmission in prisons and is key to HCV elimination. This, too, has been demonstrated in modelling studies.[154,177] Finally, HCV treatment scale-up has been shown to be cost-effective, an important consideration globally.[178,179]

The hepatitis C incidence declined by

48%

Opioid agonist therapy

OAT is recommended by the WHO and the United Nations Office on Drugs and Crime (UNODC) as one of 25 essential elements of a viral hepatitis prevention strategy in prisons.[180] As has been adopted by many countries, all people who are on OAT in the community, or who request OAT in prison and are deemed eligible within service provision guidelines, should receive access to OAT within 24 hours of admission or request, respectively. The benefits from the provision of OAT in prisons include reduced frequency of injection drug use and decreased needle and syringe sharing among people who inject drugs.[181–183] Although a 2022 systematic review found insufficient evidence that OAT reduces HCV transmission in prison,[184] several confounders such as timeliness of OAT access, sub-therapeutic dosing, and higher risk behaviours among OAT users may have contributed to the evidence quality. Importantly, the benefits of OAT extend beyond incarceration as OAT use during incarceration has been found to be associated with increased likelihood of continuity of OAT at release, lower mortality rates from fatal overdoses

While TasP is effective, high coverage OAT and PNSP, in combination with the scale-up of DAAs, is essential to mitigate HCV transmission in prisons and is key to HCV elimination

OAT reduces the frequency of injection drug use and decreases needle and syringe sharing among people who inject drugs

(especially in the post-release period), and lower re-incarceration rates.[155,185,186] OAT is available in at least one prison in 59 countries worldwide.[30,187] Methadone has traditionally been the most commonly prescribed OAT, but sublingual or subcutaneous/injectable buprenorphine is becoming more widely available. Data regarding OAT coverage in prisons is lacking, but even in high-income countries such as Australia,[98] coverage is well below the WHO high coverage indicator of >40 people per 100 opioid-dependent people who have injected drugs in the last 12 months.[188] Countries, including Canada,[189] have struggled to ensure timely access to OAT in prison due to a lack of available prescribers.

There are also logistical challenges with ensuring continuity of OAT for people transferred between prisons or released into the community, with frequent interruptions and discontinuations reported.[190] Studies on long-acting injectable buprenorphine have demonstrated comparable safety and efficacy profiles to other OAT formulations[191,192] with the added advantage of being the least costly OAT option.[193] Injectable buprenorphine is attractive for prisons due to both the reduced potential for diversion and less frequent dosing requirements (typically, monthly administrations), as well as decreased administrative and clinical burden, and improved treatment continuity for patients who may be released or transferred at short notice. Furthermore, injectable buprenorphine has been shown to be associated with increased retention on OAT post-release when compared to sublingual buprenorphine,[194] supporting the wider use of long-acting buprenorphine as the OAT treatment of choice in prison and in the community on release. As patient preferences may differ,[195] a range of OAT options should be made available to people in prison.

Prison needle and syringe programs

Needle and syringe programs are also recommended by WHO and UNODC as one of 25 essential elements of a viral hepatitis prevention strategy in prisons.[180] **Needle and syringe programs are evidence-based practices that reduce the transmission of BBVs in the community, and are particularly effective when implemented in combination with OAT for people who are opioid dependent.**[196] The benefits from the provision of PNSPs include reduced frequency of injection drug use and decreased needle and syringe sharing and reutilisation among people who inject drugs.[185] Secondary benefits include increased health-seeking behaviours (including increased BBV testing and treatment) and referrals to drug treatment programs, and decreased overdose-related deaths.[185,187] Despite being a major concern, to date, there has been no evidence of increased occupational risk to correctional employees through needlestick injuries or institutional violence where PNSPs operate.[185] There has also been no evidence that the provision of needles and syringes alters drug markets or increases the prevalence of injection drug use in prisons. A recent systematic review found that PNSPs may contribute to the prevention of HBV and HCV transmission in prison,

Globally, only 9 countries offer PNSPs in at least one of their prisons

but the quality of evidence relied on a small number of poorly designed studies, making it challenging to draw meaningful conclusions.[197]

Globally, only nine countries offer PNSPs in at least one of their prisons.[30] PNSP service delivery models vary considerably, but those with greater coverage are typically low threshold and offer non-stigmatizing models that preserve users' confidentiality and provide a diversity of distribution points. Data regarding PNSP coverage is lacking, but even in Spain, where PNSPs are available in all prisons,[198] service coverage was reported as being well below the WHO high coverage indicator of >300 syringes per year per person who injects drugs.[199] The implementation of PNSPs requires careful coordination and planning, with the engagement of multi-level stakeholders to ensure buy-in and widespread engagement from the outset.[200] In countries where PNSPs are used suboptimally, or where they have not been sustained due to ineffective implementation, an understanding of the barriers and facilitators to scaling-up PNSPs among diverse stakeholders is warranted to help inform improved program implementation and refinement.[201–207] More broadly, the implementation of PNSPs should also be accompanied by rigorous process and outcome evaluations to contribute both to the international evidence base and support the maintenance and expansion of programs globally.[208]

Condoms and lubricants

Condoms and lubricants are also recommended by WHO and UNODC as one of 25 essential elements of an HIV, viral hepatitis, and STI prevention strategy in prisons.[180] In an Australian modelling study, condoms reduced the annual incidence of HBV by 71% (estimated n=5 cases), an effect size that was small due to the low prevalence of HBV in Australian prisons.[209] No real-world prison-based study has ever been conducted to demonstrate the prevention effectiveness of condoms in reducing HAV or HCV transmission. That said, condoms have been shown to reduce heterosexual transmission of HBV and HCV, and transmission of HAV, HBV, and HCV among gay, bisexual, and men who have sex with men in the community,[210] and should therefore be made readily accessible to the entire population of people in prison.

Safe tattooing programs

There is a high prevalence of tattooing in prisons,[211] most of which occurs using unsterile and homemade equipment. Unsafe tattooing practices are associated with transmission of HBV and HCV. A systematic review of 124 studies found that tattooing was associated with a 2.56 higher odds (95% CI: 1.97-3.32) of HCV infection in prisons.[212] Similarly, a systematic review of 31 studies found that tattooing was associated with a 1.30 higher odds (95% CI: 1.01-1.66) of HBV infection in prisons.[213] Despite the increased risk, safe tattooing

programs are exceedingly rare in prison settings. While Canada had a program in six federal prisons from 2005-2006, the program was discontinued due to high maintenance costs.[214] Currently, prison tattooing programs exist only in one prison in Luxembourg, implemented in 2017 with the leadership of prison nurses.[215] In this program, tattoos are administered in dedicated rooms by trained peers and supervised by nurses.[200] There is no direct evidence regarding the prevention effectiveness of safe tattooing programs for reducing HBV and HCV transmissions in prisons. Given the high prevalence of tattooing in prisons (up to 60%),[211] and the increased associated risks of HBV and HCV transmission as well as bacterial infection harms, safe tattooing programs are recommended.

Disinfectants

Many prisons globally currently provide people in prison with bleach (or a quaternary amine disinfectant) to clean used needles and syringes and tattooing/body piercing equipment. Bleach is not recommended by any international agency (WHO or UNODC) as an essential element of a viral hepatitis prevention strategy in prisons.[180] Bleach is commonly and erroneously referred to as a key harm reduction practice in prisons;[205] however, it is not considered sufficient for the inactivation of HBV or HCV inside a used syringe, particularly in prisons where injection drug use can occur under rushed or clandestine circumstances, leaving insufficient time to adhere to syringe-disinfecting protocols.[182,216–218] Bleach is rarely, if ever, distributed by harm reduction programs in the community and a systematic review and meta-analysis of interventions to prevent HCV infection in people who inject drugs concluded that there is no evidence that the use of bleach is effective in reducing the risk of HCV transmission.[182] Similarly, there is no evidence that the use of bleach is effective in reducing HBV transmission as little is known about the inactivation of HBV by bleach.[219] Best practice dictates the use of sterile injection equipment instead of the provision of bleach.

Vaccination and post-exposure prophylaxis

Preventing primary infection by vaccination is possible for HAV and HBV, and is recommended as one of 25 essential elements of a viral hepatitis prevention strategy in prisons.[180] Prisons are important settings for reaching people with risk factors for HAV and HBV infection and can also be venues where transmission occurs.[220] A 2020 systematic review found that vaccination coverage for HBV (range 16-82%) was lower than HAV (91-96%) among people in prison, although the number of included studies was low, compromising the accuracy of this data.[26] However, global estimates are challenging

given heterogeneous vaccination policies, absent or under-utilized testing protocols to determine immunity, and under-reporting.[221]

While opt-out HBV vaccination should be offered to anyone who does not demonstrate evidence of immunity upon entry to prison, HAV vaccination should be restricted to individuals who are at high-risk for HAV infection or severe disease and without evidence of immunity. High-risk individuals are defined as men who have sex with men, people who use injection or non-injection drugs, people who have occupations risk for infection (e.g. food handlers), people experiencing homelessness, and people with HIV or with chronic liver disease, including chronic HBV and HCV infection.[69–71] However, all unvaccinated people should be offered HAV vaccination if there is an HAV outbreak in the prison where they are living or in the surrounding community.[71] A few studies have investigated the feasibility of accelerated HAV and HBV vaccination protocols among people in prison to improve coverage. These studies have shown that completion rates are significantly higher among those undergoing accelerated vaccine series with comparable evidence of seroprotection.[222–224] However, the number and timing of doses in the accelerated series for HBV have varied; for example, at 0, 1, 4, and 8 weeks in Iran[224] and 0 and 3 weeks in Italy,[222] with or without the need for additional boosters. Studies evaluating accelerated HAV vaccine series among people in prison are rare,[223] underscoring the need for additional research. However, HAV vaccination may be less relevant given the higher prevalence of background immunity.

Finally, post-exposure prophylaxis following exposure to HBV (for example, following a needlestick injury or after sharing unsterile injection equipment) among those who are non-immune is recommended as one of 25 essential elements of a viral hepatitis prevention strategy in prisons.[180] The combination of HBV immunoglobulin and vaccination is recommended as soon as possible, and up to 7-14 days after an event.

Naloxone

While not specific to the prevention of viral hepatitis, best practice prison harm reduction recommendations should include the provision of naloxone during incarceration and at prison release. Providing naloxone is one of the most effective strategies for reducing opioid overdose deaths,[225–227] and has demonstrated efficacy when provided to people upon release from prison.[228] Moreover, take-home naloxone programs have been shown to be acceptable among people in prison,[229] and have not been found to be associated with an increase in injecting frequency.[230] WHO recommends naloxone be made available to people likely to experience or witness an overdose, and makes particular reference to people leaving prison due to high rates of opioid overdose in the weeks after release.[231]

Education should address cultural appropriateness, inclusivity, gender sensitivity, low literacy, and be tailored to the unique dynamics of the setting, while aiming to go beyond raising awareness to evoking behaviour change

EDUCATION

Education is recognised by WHO as an important strategy for supporting key populations in understanding their health, health risks, and available viral hepatitis services.[31] Suboptimal engagement with prison-based hepatitis services is in part attributed to individual-level barriers such as limited knowledge and literacy, negative attitudes, and diminished health care seeking abilities.[49,137,232] Education has the potential to play an important role in overcoming these obstacles and cultivating a supportive environment which is conducive to active participation in prison-based hepatitis services and overall care. However, education is not consistently provided or available in prisons globally.

Significant gaps in viral hepatitis knowledge and stigma and discrimination exist among people in prison,[65,85,94,95,232–234] as well as custodial staff,[95,235–237] and prison-based healthcare workers.[95,238] Given the important role each of these populations has in promoting and supporting the healthcare of people in prison, there are clear benefits to educating not only people in prison, but all correctional and health employees – employing a 'whole-of-prison' approach to education.[62,239] Considering the diverse demographics within prisons and the necessity for content that resonates with different prison populations, education should address cultural appropriateness, inclusivity, gender sensitivity, low literacy, and be tailored to the unique dynamics of the setting, while aiming to go beyond raising awareness to evoking behaviour change.[31]

The evidence-base for the effectiveness of education in enhancing health outcomes and engagement with services for viral hepatitis is limited but growing. A prison-based education program for HBV, which targeted people in prison, custodial staff, and healthcare workers resulted in high uptake of HBV screening and vaccination among people in an Italian prison.[62] The New Mexico Peer Education Program, a prison-based peer education program for HCV, showed an improvement in knowledge of HCV infection, and of prevention strategies among people in prison, although it had limited effectiveness in improving

willingness to engage with HCV services.[240] The HepPEd Program is a comprehensive public health literacy, prison-focussed, HCV education program in Australia targeting people in prison, custodial staff, and healthcare workers, with an overall goal to enhance engagement with HCV services in prison.[95] A research evaluation of the impact of the HepPEd Program on HCV testing and treatment rates in prison is currently underway. However, such programs are scarce and there is a need for wider implementation of successful and comprehensive education programs in prisons globally. A systematic review of HBV and HCV education interventions found that provision of education improved disease knowledge and engagement across all stages of the hepatitis care cascade among key populations (namely, people living with viral hepatitis and people who inject drugs) in community-based substance use treatment facilities and specialist clinics.[241] While not focussed on prisons, the review revealed the effectiveness of education in enhancing engagement with health services in similar high-risk and high-prevalence settings. HAV is rarely covered in viral hepatitis education and there is no literature on this topic; however, its importance should not go unrecognised.

It is well known that peers are an effective[85,240] and cost-effective strategy for education delivery and information sharing in prisons[87] because of their ability to create trustworthy and non-stigmatising connections. As such, peers should be involved in the provision of education wherever possible. Nevertheless, education and counselling from healthcare workers has also been associated with high rates of uptake of testing and vaccination,[242] and so should be routinely integrated into all health interactions.[138] To maximise uptake, healthcare workers and peers should work together to deliver education in a non-judgemental manner. This highlights the importance of patient-centred healthcare worker training that addresses the unique barriers at each step of the viral care cascade. Interestingly, mathematical modelling has also suggested that educational campaigns targeting HCV transmission could be effective in limiting the sharing of injection equipment among people who inject drugs in prisons, potentially resulting in a reduction in HCV prevalence.[243]

Additional research is needed to understand the diverse needs and considerations of minority populations in prison such that viral hepatitis prevention, testing, and treatment services can be appropriately tailored

MINORITY POPULATIONS AND SPECIAL CONSIDERATIONS

Minority populations including women, transgender people, people belonging to racial/ethnic minorities, people who use drugs, men who have sex with men, and sex workers often have a higher prevalence of viral hepatitis in comparison to the general prison population, highlighting the specific considerations needed for these populations to appropriately respond to their needs.[244] Prevention programs for key populations have been shown to be effective, although significant gaps in the evidence-base regarding viral hepatitis transmission amongst these minority populations, particularly among men who have sex with men, sex workers, and transgender people in prisons remain.[244] These populations are often prone to stigmatization and discrimination, which is augmented in prisons, highlighting the need for health information confidentiality. Testing, treatment, and harm reduction services, while particularly relevant to these populations, should be offered universally; individuals may not readily identify themselves as a member of a minority population as this may lead to greater stigmatisation and discrimination.

For female prisons, a more tailored approach to hepatitis services should be offered to ensure parity; that is, a gender perspective is necessary when designing viral hepatitis interventions.[245] Women in prison have distinctive needs (such as during menstruation and menopause, pregnancy, and breastfeeding) and providing for such needs is enshrined in the Bangkok Rules to ensure gender equality.[246] Incarceration, drug use, and sexual risk are interlinked for females, making this population a particularly high risk group for HBV and HCV infection.[247–249] For females who are pregnant while incarcerated, risk is also conferred to the fetus or child in the peripartum period. Therefore, all mothers should be routinely tested for HBV and HCV. All HCV-infected mothers should also be educated about the safety of breast feeding. While there is a lack of evidence to support these recommendations in carceral settings, there is ample evidence from the community.[250–252]

There are significant gaps in evidence-based knowledge of viral hepatitis transmission among MSM, sex workers, and transgender people in prisons. For transgender people on hormone therapy, however, sterile injecting equipment should be accessible. Additional research is needed to understand the diverse needs and considerations of minority populations in prison such that viral hepatitis prevention, testing, and treatment services can be appropriately tailored.

MONITORING AND EVALUATION

Data availability for prisons at the global level is insufficient to calculate HBV and HCV monitoring indicators.[21] Given this omission, prison-related data are often absent in national and international surveillance and monitoring systems. The exclusion or uncertain inclusion of people in prison from global monitoring systems raises concerns about the accuracy of data. Given these critical gaps, accurately assessing progress towards HBV and HCV elimination at the global-, country-, or regional-level is not possible. The inclusion of people in prison, who are considered a key population for viral hepatitis elimination, is thus critical in these metrics.

Effective delivery of health services is underpinned by monitoring and evaluation which involves systematic data collection, analysis, and reporting of information about the service.[21,253] For public health systems focussed on infectious diseases, such as prison hepatitis services, this ideally involves surveillance of the prevalence and incidence of infection and disease, as well as monitoring of the provision and uptake of testing, treatment and prevention services. Surveillance activities may be undertaken via passive means such as regular automated or semi-automated notification of laboratory or clinical datasets from the prisons, or actively via information provided by health care workers or service administrators. The latter requires substantially more time and resources, but is generally more comprehensive.[254]

To date, prison-based viral hepatitis surveillance has generally been undertaken passively with administrative datasets collected from national and regional health or custodial authorities by a central agency. This approach is exemplified by WHO Health in Prisons European Database (HIPED), which aims to capture the system-level aspects of prison health care (such as whether administration is via the ministry of health, justice, or interior), the delivery aspects of prison health care (such as provision of primary care and prevention services), and the health outcomes (such as morbidity and mortality).[255,256] Although informative, this European surveillance dataset and similar data from the US, are somewhat limited by the quality and completeness of the inputs, in turn reflecting the limitations of the information systems within the prison sector.[257] An alternative active surveillance strategy is repeated biobehavioural surveys of a representative sample of prisons and people in prison incorporating self-reported data on demographics, risk factors, testing, treatment, and prevention measures such as immunisation uptake. This approach has been adopted in Australia, initially in the triennial National Prison Entrants Blood Borne Virus Survey,[258,259] and more recently in the Australian Hepatitis and Risk Survey in Prisons (AusHep), providing an annual snapshot of each of these measures.[260,26]

CONCLUSIONS

Thirty best practice recommendations in viral hepatitis service delivery in prisons have been outlined in these Global Guidelines across all domains of the viral care cascade. The process was informed by key clinical, consumer, drug user, public health, and organizational stakeholders and researchers, and the Guidelines are intended to inform policymaking by national and regional government departments with responsibility for the provision or oversight of prison health services. Several limitations are worth noting such as the under-developed or absent evidence base underpinning several recommendations. However, evidence from comparable disease areas (e.g. HIV) or in populations (people who inject drugs) were used where applicable to guide recommendations. In addition, the expert group was largely made up of individuals from high-income countries although we did have representation from the African region. That said, these Guidelines are meant to have global applicability, although the feasibility of their implementation in resource-limited settings, such as in low- and middle-income countries, should be considered.

Care for people in prisons is challenged by limited political will, staff and resource limitations, and logistical issues such as frequent transfers and release. However, with sufficient advocacy and utilization of data-driven strategies, prisons allow access to the most marginalised groups from the community. Given viral hepatitis constitutes the major health burden of infectious diseases among people in prison globally, leveraging prisons as touchpoints is an essential elimination strategy.

Given a shared commitment to enhancing best practices in viral hepatitis services for people in prisons, international and national efforts to prioritize people in prison in elimination efforts are urgently needed. Care for people in prisons is not only a matter of health equity under the Mandela Rules, but an essential element for global viral hepatitis elimination to be achieved. The recommendations and the evidence base underpinning those recommendations are intended to galvanize these efforts through a coordinated global approach.

Care for people in prisons is not only a matter of health equity under the Nelson Mandela Rules, but an essential element for global viral hepatitis elimination to be achieved

FUNDING

No funding was received for this work.

METHODS

This document was adapted from the WHO standard guidelines development methods.[262]

Phase 1: Planning

The development of these Guidelines was led by a Steering Committee consisting of the INHSU Prisons Chair, the three Co-Vice Chairs, the Early Career Representative, and an appointed Guidelines coordinator ('Appendix 1; 'Guidelines Steering Committee'). The Guidelines Steering Committee met four times between November 2023 and May 2024 to establish the scope of work, identify key opinion leaders (KOLs), plan the development process, and monitor progress. The Steering Committee decided a priori on eight domains that would form the basis of the Guidelines. These included: policy, testing, treatment, continuity of care, prevention and harm reduction, education, monitoring and evaluation, and consideration of minority populations (defined as minority populations in prison). Thereafter, the Guidelines Steering Committee convened a group of KOLs and technical experts (n=11) in the field of viral hepatitis and prisons, including clinicians, researchers, service providers, consultant and policy advisors, peers, and advocates, all of whom made up the author group (Appendix 1; 'Author Group'). Efforts were made to ensure representation by constituency, expertise, geography, gender, and socio-economic strata. The Guidelines Steering Committee included representation from four of the six WHO Regions (Americas, Africa, Europe, and Western Pacific) including one individual from a low- and middle-income country. Eight expert working groups were established, one for each of the eight domains, which were each led by a Guidelines Steering Committee member and consisted of at least one KOL based on their area of expertise (Appendix 1; 'Author Group'). Some KOLs contributed to more than one working group. Additionally, global consumer and community organisations representing viral hepatitis and drug-user sectors (Appendix 1; 'Consumer and Drug User Organisations') were engaged to ensure the inclusion of community perspectives throughout the development process. These organisations each established consumer groups, consisting of their members with relevant expertise, to support the process.

Phase 2: Literature review

A systematic literature review was conducted to inform the evidence base in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 statement.[263]

A search was conducted in MEDLINE, Scopus, Embase, and CENTRAL for articles on HAV, HBV, and HCV and prisons published from database inception until 29 November 2023. There were no language or article-type restrictions. Synonyms were combined for each of HAV, HBV, and HCV via 'OR' operators, and joined with synonyms for prisons via an 'AND' operator. The exact search terms can be found in Appendix 2. Articles were included if the population consisted primarily of people in prison, or if a substantial subgroup of the studied population included people in prison. Additionally, the description or intervention had to pertain to HAV, HBV, and HCV this population. There were no specific outcome measures identified a priori. For the purpose of the systematic review, we excluded preprints and conference papers.

Data were exported into Covidence[264] and duplicates were removed. Two reviewers (YS and AG) screened each title and abstract for eligibility and disagreements were resolved by consensus between the two reviewers. All articles were then categorized into the eight domains identified a priori by the Guidelines Steering Committee: policy, testing, treatment, continuity of care, prevention and harm reduction, education, monitoring and evaluation, and consideration of minority populations. When articles provided data on more than one domain, they were categorized into each of the relevant domains. Data from the articles were extracted by one reviewer (AG) using a standardized extraction form for each of the eight domains. The following variables were collected: title, authors, publication year, journal, abstract, study design, and reported hepatitis virus (A, B, and/or C). Full text versions of each article were sourced by two reviewers (YS and AG) and saved into folders organized by domain. Data (organized in Excel), along with full-text articles, were provided to each of the working groups for evidence synthesis and to support generation of recommendations.

Phase 3: Development of the recommendations and draft text

Each expert working group met virtually at least once between March and April 2024 to discuss the scope of their domain, synthesize evidence from the systematic review, and formulate draft recommendations based on available evidence. The Guidelines Steering Committee lead for each working group drafted complimentary text for each domain, synthesizing the available evidence to underpin the recommendations. The draft text and recommendations were shared with the working group members for peer review and feedback, and additional virtual meetings were organized for further discussion if needed. The draft recommendations were also provided to consumer group members for input, with feedback considered and incorporated, as appropriate, by the Guidelines Steering Committee. The draft text and recommendations for each domain were then collated and circulated to the broader author group prior to the GRADE process for review.

Phase 4: Rating the recommendations

The author group met virtually five times between May and June 2024 to discuss, in detail, the content, application, wording, and feasibility of each recommendation. The Guidelines Steering Committee lead facilitated discussion of the recommendations in their domain. For each recommendation, the quality of the supporting evidence and strength of the recommendation were rated according to the GRADE system.[265,266]

The quality of the evidence supporting the recommendation was classified into one of five levels: high (A), moderate (B), low (C), very low (D), and expert opinion (EO) (Table 3). Minor modifications to the standard GRADE levels for rating of the quality of evidence were agreed upon by the author group a priori. Given the dearth of prison-related viral hepatitis research, where applicable, the authors agreed that evidence from comparable disease areas (e.g. HIV) or in populations or settings (e.g. people who inject drugs in the community) could be considered to upgrade the recommendations made. For example, a recommendation that was considered grade C in prisons may have been upgraded to grade B if there was superior-level evidence in comparable populations, settings, or infections.

The strength of the recommendation was classified into one of two levels: strong (1) or weak (2) (Table 4). The strength of the recommendation was influenced by factors such as the quality of the evidence, social acceptability, costs and feasibility, and preferences and values, all of which were considered during the GRADE process where appropriate.

For each recommendation, consensus for both quality and strength between members of the author group was achieved at a pre-determined level of 80%, conducted via live anonymous online polling. Where necessary, the content of the recommendations was discussed and revised to achieve consensus.

Phase 5: Full document development, stakeholder feedback and consolidation, and endorsement

The draft text and recommendations were collated into a full draft Guidelines document, which was edited and prepared by three authors (YS, AG, and NK). The draft Guidelines were circulated to the author group for review and feedback. Key stakeholder organisations and consumer group members were invited to comment on the draft Guidelines, with a view to formal endorsement. The Guidelines were endorsed by the INHSU Prisons Executive on August 6, 2024. Key stakeholder organisations were also invited to formally endorse the statement (Appendix 1; 'Endorsing Organisations').

Table 3: GRADE categories for quality of evidence rating

Quality of evidence	Evidence base
A (High)	Multiple randomized controlled trials with consistent findings; single randomized controlled trial and consistent findings in other studies (quasi-randomized controlled trial, observational, case series)
B (Moderate)	Single randomized controlled or quasi-randomized controlled trial only
C (Low)	Large observational studies or case series
D (Very low)	Small observational studies or case series
Expert Opinion	None

Table 4: GRADE categories for strength of recommendation rating

Strength of recommendation	Factors influencing the strength of recommendation
1 (Strong)	Quality of evidence, presumed patient-important outcomes, and cost
2 (Weak)	Variability in preferences and values, or more uncertainty

RESULTS

In the systematic literature review, a total of 3,991 unique articles were initially retrieved, of which 1,048 were deemed eligible and included to guide evidence synthesis (Figure 1). A total of 2,944 articles were excluded, most of which were excluded due to either irrelevance, or a focus on hepatitis or prisons but not both. A total of 821 articles on HCV, 400 articles on HBV, and 46 articles focused on HAV, with the total exceeding 1,048 as 251 articles discussed more than one virus. The articles were distributed into the eight domains: policy (n=55), testing (n=159), treatment (n=186), continuity of care (n=90), prevention and harm reduction (n=251), education (n=75), minority populations (n=103), and monitoring and evaluation (n=185). Additionally, articles relating to epidemiology (n=508) were collated. Again, these exceed the total number of articles as 308 were classified in more than one domain.

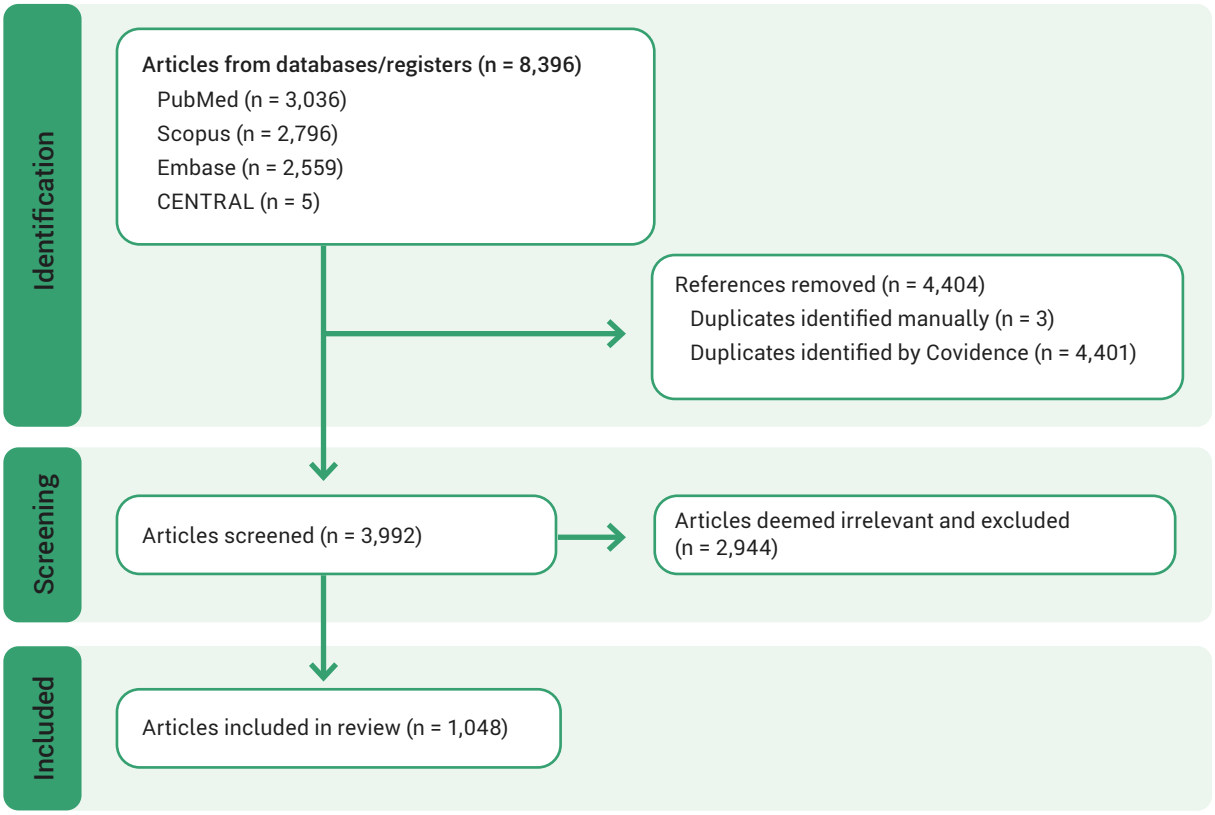

Figure 1: PRISMA flow diagram of literature review

A total of a total of 30 evidence-informed recommendations were developed (Table 1). These included two policy, four testing, six treatment, six continuity of care, eight prevention and harm reduction, one education, and two monitoring and evaluation recommendations. Although 42 recommendations were initially proposed, during Phase 4, 12 recommendations were eventually collapsed or determined by the author group to be of insufficient importance to be retained as a specific recommendation and so were included as text only.

APPENDIX 1: ACKNOWLEDGEMENTS

Guidelines Steering Committee

Name	Affiliation
Matthew J. Akiyama	Department of Medicine, Albert Einstein College of Medicine / Montefiore Medical Centre, New York, USA; INHSU Prisons
Joaquín Cabezas	Gastroenterology and Hepatology Department, University Hospital Marques de Valdecilla, Santander, Spain; Clinical and Translational Research in Digestive Diseases, Valdecilla Research Institute, Santander, Spain; INHSU Prisons
Akhil Garg	Department of Medicine, Division of Infectious Diseases and Chronic Viral Illness Service, McGill University Health Centre, Montréal, Québec, Canada
Nadine Kronfli	Department of Medicine, Division of Infectious Diseases and Chronic Viral Illness Service, McGill University Health Centre, Montréal, QC, Canada; Centre for Outcomes Research and Evaluation, Research Institute of the McGill University Health Centre, Montréal, Québec, Canada; INHSU Prisons
Andrew R. Lloyd	Kirby Institute, University of New South Wales, Sydney, NSW, Australia; INHSU Prisons
Yumi Sheehan	Kirby Institute, University of New South Wales, Sydney, NSW, Australia; INHSU Prisons

Author Group

Domain	Working Group Members	Affiliation
Policy	Andrew R. Lloyd*	Kirby Institute, University of New South Wales, Sydney, NSW, Australia; INHSU Prisons
	Filipa Alves da Costa	World Health Organization, Regional Office for Europe, Copenhagen, Denmark
	Ehab Salah	United Nations Office on Drugs and Crime, Vienna, Austria
Testing	Yumi Sheehan*	Kirby Institute, University of New South Wales, Sydney, New South Wales, Australia; INHSU Prisons
	Joaquín Cabezas	Gastroenterology and Hepatology Department, University Hospitial Marques de Valdecilla, Santander, Spain; Clinical and Translational Research in Digestive Diseases, Valdecilla Research Institute, Santander, Spain; INHSU Prisons
	Sean Cox	The Hepatitis C Trust, London, England, United Kingdom
Treatment	Joaquín Cabezas*	Gastroenterology and Hepatology Department, University Hospitial Marques de Valdecilla, Santander, Spain; Clinical and Translational Research in Digestive Diseases, Valdecilla Research Institute, Santander, Spain; INHSU Prisons
	Ahmed M. Elsharkawy	Liver Unit and National Institute for Health and Care Research Biomedical Research Centre at University Hospitals Birmingham, University Hospitals Birmingham, Birmingham, England, United Kingdom
	Alexander J. Thompson	Department of Gastroenterology, St Vincent's Hospital Melbourne, Melbourne, Victoria, Australia University of Melbourne, Melbourne, Victoria, Australia

Continuity of care	Matthew J. Akiyama*	Department of Medicine, Albert Einstein College of Medicine / Montefiore Medical Centre, New York, USA; INHSU Prisons
	Nadine Kronfli	Department of Medicine, Division of Infectious Diseases and Chronic Viral Illness Service, McGill University Health Centre, Montréal, QC, Canada; Centre for Outcomes Research and Evaluation, Research Institute of the McGill University Health Centre, Montréal, Québec, Canada; INHSU Prisons
	Mark Stoové	Burnet Institute, Melbourne, Victoria, Australia
Prevention and harm reduction	Nadine Kronfli*	Department of Medicine, Division of Infectious Diseases and Chronic Viral Illness Service, McGill University Health Centre, Montréal, QC, Canada; Centre for Outcomes Research and Evaluation, Research Institute of the McGill University Health Centre, Montréal, Québec, Canada; INHSU Prisons
	Frederick L. Altice	Yale University, New Haven, Connecticut, USA
	Mark Stoové	Burnet Institute, Melbourne, Victoria, Australia
Education	Yumi Sheehan*	Kirby Institute, University of New South Wales, Sydney, NSW, Australia; INHSU Prisons
	Julia Sheehan	The Hepatitis C Trust, London, England, United Kingdom; INHSU Prisons
	Karla Thornton	University of New Mexico School of Medicine, Albuquerque, New Mexico, USA
Minority populations and special considerations	Matthew J. Akiyama*	Department of Medicine, Albert Einstein College of Medicine / Montefiore Medical Centre, New York, USA; INHSU Prisons
	Nonso Maduka	Bensther Development Foundation, Enegu, Nigeria; INHSU Prisons
	Julia Sheehan	The Hepatitis C Trust, London, England, UK; INHSU Prisons
Monitoring and evaluation	Andrew R. Lloyd*	Kirby Institute, University of New South Wales, Sydney, NSW, Australia; INHSU Prisons
	Sean Cox	The Hepatitis C Trust, London, England, United Kingdom
	Lara Tavoschi	Department of Translational Research and New Technologies in Medicine and Surgery, University of Pisa, Pisa, Italy

*Denotes each domain's working group leader

WHO and UNODC acknowledge the significance of the "Global Guidelines for Viral Hepatitis Service Delivery in Prisons", developed by INHSU Prisons in collaboration with global experts. UNODC and WHO contributed to the development of this document through expert advice and active involvement in the subgroup discussions on policy.

CONFLICTS OF INTEREST

All authors have no conflicts of interest related to the development of the Global Guidelines for Viral Hepatitis Service Delivery in Prisons.

Consumer and Drug User Organisations

World Hepatitis Alliance (WHA)

Danjuma Adda; CFID/CCT Nigeria

George Kalamitsis; Hellenic Liver Patient Association “Prometheus”

Nalinikanta Rajkumar; Community Network for Empowerment, Community of Practitioners on Accountability and Social Action in Health

Peduli Hati Bangsa Foundation

International Network for People who Use Drugs (INPUD)

Costa Rican Association on Drug Studies and Interventions

Middle East and North Africa Network of/for People who use Drugs

African Network of People who Use Drugs

INPUD consumer group members were remunerated for their time, to a maximum of five hours.

Endorsing Organisations

APPENDIX 2: SEARCH STRATEGY

(("Hepatitis A" OR "HAV" OR "hep A" OR "hepA" OR "hepatitisA")

OR

("Hepatitis B" OR "HBV" OR "hep B" OR "hepB" OR "hepatitisB")

OR

("HCV" OR "Hepatitis C" OR "hep C" OR "hepC" OR "hepatitisC" OR "NANB" OR "NANBH" OR "non-A, non-B" OR "non-A non-B"))

AND

("prison*" OR "jail*" OR "gaol*" OR "penitentiary" OR "penal*" OR "detent*" OR "detain*" OR "incarcerat*" OR "justice" OR "judici*" OR "custod*" OR "inmat*" OR "correction*" OR "carceral" OR "linkage to care" OR "linked to care" OR "link to care" OR "post-release" OR "post release" OR "following release")

REFERENCES

1. Penal Reform International. Global Prison Trends 2023 [Internet]. Penal Reform International; 2023 [cited 2024 Aug 4]. Available from: https://www.penalreform.org/global-prison-trends-2023/.
2. Fair H, Walmsley R. World Prison Population List, 13th Edition [Internet]. Institute for Crime and Justice Policy Research; 2021. Available from: https://www.prisonstudies.org/sites/default/files/resources/downloads/world_prison_population_list_13th_edition.pdf.
3. Aebi M, Cocco E. SPACE I - 2023 – Council of Europe Annual Penal Statistics: Prison populations [Internet]. Council of Europe; 2024 [cited 2024 Aug 4]. Available from: https://wp.unil.ch/space/files/2024/06/SPACE_I_2023_Report.pdf.
4. Fazel S, Baillargeon J. The health of prisoners. The Lancet. 2011 Mar 12;377(9769):956–65.
5. Dolan K, Wirtz AL, Moazen B, Ndeffo-Mbah M, Galvani A, Kinner SA, et al. Global burden of HIV, viral hepatitis, and tuberculosis in prisoners and detainees. Lancet. 2016;388(10049):1089–102.
6. The United Nations Standard Minimum Rules for the Treatment of Prisoners. United Nations Office on Drugs and Crime; 2015.
7. Post JJ, Arain A, Lloyd AR. Enhancing assessment and treatment of hepatitis C in the custodial setting. Clin Infect Dis. 2013;57 Suppl 2:S70-4.
8. De Viggiani N. Unhealthy prisons: exploring structural determinants of prison health. Sociology of Health & Illness. 2007;29(1):115–35.
9. Bivegete S, McNaughton AL, Trickey A, Thornton Z, Scanlan B, Lim AG, et al. Estimates of hepatitis B virus prevalence among general population and key risk groups in EU/EEA/UK countries: a systematic review. Euro Surveill. 2023;28(30).
10. Larney S, Kopinski H, Beckwith CG, Zaller ND, Jarlais DD, Hagan H, et al. Incidence and prevalence of hepatitis C in prisons and other closed settings: results of a systematic review and meta-analysis. Hepatology. 2013;58(4):1215–24.
11. Salari N, Darvishi N, Hemmati M, Shohaimi S, Ghyasi Y, Hossaini F, et al. Global prevalence of hepatitis C in prisoners: a comprehensive systematic review and meta-analysis. Arch Virol. 2022;167(4):1025–39.
12. Champion JK, Taylor A, Hutchinson S, Cameron S, McMenamin J, Mitchell A, et al. Incidence of hepatitis C virus infection and associated risk factors among Scottish prison inmates: a cohort study. Am J Epidemiol. 2004;159(5):514–9.
13. Hajarizadeh B, Carson JM, Byrne M, Grebely J, Cunningham E, Amin J, et al. Incidence of hepatitis C virus infection in the prison setting: The SToP-C study. J Viral Hepat. 2023;.
14. Li H, Cameron B, Douglas D, Stapleton S, Cheguelman G, Butler T, et al. Incident hepatitis B virus infection and immunisation uptake in Australian prison inmates. Vaccine. 2020;38(16):3255–60.
15. Luciani F, Bretaña NA, Teutsch S, Amin J, Topp L, Dore GJ, et al. A prospective study of hepatitis C incidence in Australian prisoners. Addiction. 2014;109(10):1695–706.
16. Stone J, Fraser H, Lim AG, Walker JG, Ward Z, MacGregor L, et al. Incarceration history and risk of HIV and hepatitis C virus acquisition among people who inject drugs: a systematic review and meta-analysis. The Lancet Infectious Diseases. 2018 Dec 1;18(12):1397–409.
17. Global health sector strategy on viral hepatitis 2016-2021. Towards ending viral hepatitis [Internet]. World Health Organization; 2016 [cited 2024 Jun 7]. Available from: https://iris.who.int/handle/10665/246177.
18. Cui F, Blach S, Manzengo Mingiedi C, Gonzalez MA, Sabry Alaama A, Mozalevskis A, et al. Global reporting of progress towards elimination of hepatitis B and hepatitis C. Lancet Gastroenterol Hepatol. 2023 Apr;8(4):332–42.

19. Lazarus JV, Picchio CA, Byrne CJ, Crespo J, Colombo M, Cooke GS, et al. A Global Systematic Review of Hepatitis C Elimination Efforts through Micro-Elimination. Semin Liver Dis. 2022 May;42(2):159–72.

20. Rockstroh JK, Swan T, Chang J, Elamouri F, Lloyd AR. The path to hepatitis C elimination: who are we leaving behind and why? J Int AIDS Soc. 2023 Jul 26;26(7):e26136.

21. Tavoschi L, Cocco N, Alves da Costa F, Lloyd AR, Kinner SA. People living in prison must be included in country monitoring systems to accurately assess HCV elimination progress. Lancet Gastroenterol Hepatol. 2024 Jun;9(6):500–1.

22. World Health Organization. Access to hepatitis C testing and treatment for people who inject drugs and people in prisons: a global perspective: policy brief, April 2019 [Internet]. Geneva: World Health Organization; 2019. Available from: https://iris.who.int/handle/10665/312116.

23. Rich JD, Beckwith CG, Macmadu A, Marshall BDL, Brinkley-Rubinstein L, Amon JJ, et al. Clinical care of incarcerated people with HIV, viral hepatitis, or tuberculosis. Lancet. 2016;388(10049):1103–14.

24. Vroling H, Oordt-Speets AM, Madeddu G, Babudieri S, Monarca R, O'Moore E, et al. A systematic review on models of care effectiveness and barriers to Hepatitis C treatment in prison settings in the EU/EEA. J Viral Hepat. 2018;25(12):1406–22.

25. Madeddu G, Vroling H, Oordt-Speets A, Babudieri S, O'Moore É, Noordegraaf MV, et al. Vaccinations in prison settings: A systematic review to assess the situation in EU/EEA countries and in other high income countries. Vaccine. 2019;37(35):4906–19.

26. Vicente-Alcalde N, Ruescas-Escolano E, Harboe ZB, Tuells J. Vaccination Coverage among Prisoners: A Systematic Review. Int J Environ Res Public Health. 2020;17(20).

27. WHO Regional Office for Europe. Status report on prison health in the WHO European Region 2022 [Internet]. Copenhagen: WHO Regional Office for Europe; 2023 [cited 2024 Jul 27]. Available from: https://www.who.int/europe/publications/i/item/9789289058674.

28. Sander G, Shirley-Beavan S, Stone K. The Global State of Harm Reduction in Prisons. J Correct Health Care. 2019;25(2):105–20.

29. Stöver H, Tarján A, Horváth G, Montanari L. The state of harm reduction in prisons in 30 European countries with a focus on people who inject drugs and infectious diseases. Harm Reduct J. 2021;18(1):67.

30. The Global State of Harm Reduction: 2023 Update to Key Data [Internet]. Harm Reduction International; 2023 [cited 2024 Jun 7]. Available from: https://hri.global/wp-content/uploads/2023/11/HRI_global-overview_2023_FINAL.pdf.

31. Consolidated guidelines on HIV, viral hepatitis and STI prevention, diagnosis, treatment and care for key populations [Internet]. Geneva: World Health Organization; 2022. 144 p. Available from: https://www.who.int/publications/i/item/9789240052390.

32. Global HIV, Hepatitis and STIs Programmes (HHS). Recommended package of interventions for HIV, viral hepatitis and STI prevention, diagnosis, treatment and care for people in prisons and other closed settings [Internet]. World Health Organization; 2023 [cited 2024 Aug 4]. Available from: https://www.who.int/publications/i/item/9789240075597.

33. United Nations Office on Drugs and Crime. HIV prevention, treatment and care in prisons and other closed settings: a comprehensive package of interventions [Internet]. United Nations Office on Drugs and Crime; 2013 [cited 2024 Aug 4]. Available from: https://www.unodc.org/documents/hiv-aids/HIV_comprehensive_package_prison_2013_eBook.pdf.

34. Guidance for country validation of viral hepatitis elimination and path to elimination [Internet]. Geneva: World Health Organization; 2023 [cited 2024 Jun 6]. 112 p. Available from: https://iris.who.int/bitstream/handle/10665/373186/9789240078635-eng.pdf?sequence=1.

35. World Health Organization. Strategizing national health in the 21st century: a handbook [Internet]. Geneva: World Health Organization; 2016 [cited 2024 May 6]. Available from: https://iris.who.int/handle/10665/250221.

36. Pawlotsky JM, Negro F, Aghemo A, Berenguer M, Dalgard O, Dusheiko G, et al. EASL recommendations on treatment of hepatitis C: Final update of the series . Journal of Hepatology. 2020 Nov 1;73(5):1170–218.

37. Bhattacharya D, Aronsohn A, Price J, Lo Re V III, the American Association for the Study of Liver Diseases–Infectious Diseases Society of America HCV Guidance Panel. Hepatitis C Guidance 2023 Update: American Association for the Study of Liver Diseases– Infectious Diseases Society of America Recommendations for Testing, Managing, and Treating Hepatitis C Virus Infection. Clinical Infectious Diseases. 2023 May 25;ciad319.

38. Updated recommendations on HCV simplified service delivery and HCV diagnostics: policy brief [Internet]. Geneva: World Health Organization; 2022 [cited 2024 May 8]. 32 p. Available from: https://www.who.int/publications/i/item/9789240052697.

39. Terrault NA, Bzowej NH, Chang KM, Hwang JP, Jonas MM, Murad MH, et al. AASLD guidelines for treatment of chronic hepatitis B. Hepatology. 2016 Jan;63(1):261–83.

40. Policy brief – Guidelines for the prevention, diagnosis, care and treatment for people with chronic hepatitis B infection [Internet]. Geneva: World Health Organization; 202403-29. 28 p. Available from: https://www.who.int/publications/i/item/9789240091368.

41. Hepatitis A Prevention and Management Guidelines| CDC [Internet]. 2020 [cited 2024 May 8]. Available from: https://www.cdc.gov/hepatitis/hav/guidelinesa.htm.

42. European Association for the Study of the Liver. EASL 2017 Clinical Practice Guidelines on the management of hepatitis B virus infection. J Hepatol. 2017 Aug;67(2):370–98.

43. Lafferty L, Wild TC, Rance J, Treloar C. A policy analysis exploring hepatitis C risk, prevention, testing, treatment and reinfection within Australia's prisons. Harm Reduct J. 2018;15(1):39.

44. Mousavi S, Alavi M, Delavari A, Poustchi H, Mohammadi Z, Malekzadeh R. Towards hepatitis C virus elimination in Iran: A blueprint for comprehensive strategies. J Viral Hepat. 2024 Jun 3; .

45. Safreed-Harmon K, Hetherington KL, Aleman S, Alho H, Dalgard O, Frisch T, et al. Policy responses to hepatitis C in the Nordic countries: Gaps and discrepant reporting in the Hep-Nordic study. PLOS ONE. 2018 Jan 30;13(1):e0190146.

46. Spina A, Eramova I, Lazarus JV. Policy responses to viral hepatitis B and C among people who inject drugs in Member States of the WHO European region: a sub-analysis of the WHO 2013 global hepatitis policy survey. BMC Infect Dis. 2014;14 Suppl 6(Suppl 6):S15.

47. Tucker JD, Ahmad A, Mulu A, Muyoyeta M, Hassan MRA, Kamarulzaman A. Hepatitis C testing, treatment and prevention in low- and middle-income country prisons. Nat Rev Gastroenterol Hepatol. 2022 Aug;19(8):484–5.

48. Nakitanda AO, Montanari L, Tavoschi L, Mozalevskis A, Duffell E. Hepatitis C virus infection in EU/EEA and United Kingdom prisons: opportunities and challenges for action. BMC Public Health. 2020;20(1):1670.

49. Akiyama MJ, Kronfli N, Cabezas J, Sheehan Y, Thurairajah PH, Lines R, et al. Hepatitis C elimination among people incarcerated in prisons: challenges and recommendations for action within a health systems framework. Lancet Gastroenterol Hepatol. 2021;6(5):391–400.

50. Winter RJ, Holmes JA, Papaluca TJ, Thompson AJ. The Importance of Prisons in Achieving Hepatitis C Elimination: Insights from the Australian Experience. Viruses. 2022;14(3).

51. Akiyama MJ, Kronfli N, Cabezas J, Sheehan Y, Scheibe A, Brahni T, et al. The role of low-income and middle-income country prisons in eliminating hepatitis C. Lancet Public Health. 2022;7(7):e578–9.

52. Tavoschi L. Treatment-as-prevention in prison settings: a growing evidence base for HCV elimination efforts. Lancet Gastroenterol Hepatol. 2021;6(7):512–3.

53. Global health sector strategies on, respectively, HIV, viral hepatitis and sexually transmitted infections for the period 2022-2030 [Internet]. Geneva: World Health Organization; 2022 [cited 2024 Jun 7]. 134 p. Available from: https://www.who.int/publications/i/item/9789240053779.

54. Kavasery R, Maru DSR, Sylla LN, Smith D, Altice FL. A prospective controlled trial of routine opt-out HIV testing in a men's jail. PLoS One. 2009 Nov 25;4(11):e8056.

55. Macgowan R, Margolis A, Richardson-Moore A, Wang T, Lalota M, French PT, et al. Voluntary Rapid Human Immunodeficiency Virus (HIV) Testing in Jails. Sexually Transmitted Diseases. 2009 Feb;36(2):S9.

56. Rumble C, Pevalin DJ, O'Moore É. Routine testing for blood-borne viruses in prisons: a systematic review. Eur J Public Health. 2015;25(6):1078–88.

57. Tavoschi L, Vroling H, Madeddu G, Babudieri S, Monarca R, Vonk Noordegraaf-Schouten M, et al. Active Case Finding for Communicable Diseases in Prison Settings: Increasing Testing Coverage and Uptake among the Prison Population in the European Union/European Economic Area. Epidemiologic Reviews. 2018;40(1):105–20.

58. Cunningham EB, Hajarizadeh B, Bretana NA, Amin J, Betz-Stablein B, Dore GJ, et al. Ongoing incident hepatitis C virus infection among people with a history of injecting drug use in an Australian prison setting, 2005-2014: The HITS-p study. J Viral Hepat. 2017;24(9):733–41.

59. Sheehan Y, Cunningham EB, Cochrane A, Byrne M, Brown T, McGrath C, et al. A "one-stop-shop" point-of-care hepatitis C RNA testing intervention to enhance treatment uptake in a reception prison: The PIVOT study. J Hepatol. 2023;79(3):635–44.

60. Nakitanda AO, Montanari L, Tavoschi L, Mozalevskis A, Duffell E. Hepatitis B virus infection in EU/EEA and United Kingdom prisons: a descriptive analysis. Epidemiol Infect. 2021;149:e59.

61. Mongale E, Allen S, Brew I, Ludlow-Rhodes A, Royal N, Waldron J, et al. Development and optimisation of a reception testing protocol designed to eliminate HCV in the UK prison population. JHEPReport [Internet]. 2024 Jan 1 [cited 2024 Jun 7];6(1). Available from: https://www.jhep-reports.eu/article/S2589-5559(23)00268-9/fulltext.

62. Stasi C, Monnini M, Cellesi V, Salvadori M, Marri D, Ameglio M, et al. Ways to promote screening for hepatitis B virus and accelerated vaccination schedule in prison: Training, information, peer education. Rev Epidemiol Sante Publique. 2022;70(1):25–30.

63. Francis-Graham S, Ekeke NA, Nelson CA, Lee TY, Haj SE, Rhodes T, et al. Understanding how, why, for whom, and under what circumstances opt-out blood-borne virus testing programmes work to increase test engagement and uptake within prison: a rapid-realist review. BMC Health Serv Res. 2019;19(1):152.

64. Ruiz AS, Fontaine G, Patey AM, Grimshaw JM, Presseau J, Cox J, et al. Identifying barriers and enablers to opt-out hepatitis C virus screening in provincial prisons in Quebec, Canada: A multilevel, multi-theory informed qualitative study with correctional and healthcare professional stakeholders. Int J Drug Policy. 2022;109:103837.

65. Lafferty L, Sheehan Y, Cochrane A, Grebely J, Lloyd AR, Treloar C. Reducing barriers to the hepatitis C care cascade in prison via point-of-care RNA testing: a qualitative exploration of men in prison using an integrated framework. Addiction. 2023;118(6):1153–60.

66. Kronfli N, Dussault C, Klein MB, Lebouché B, Sebastiani G, Cox J. The hepatitis C virus cascade of care in a Quebec provincial prison: a retrospective cohort study. CMAJ Open. 2019;7(4):E674–9.

67. Duchesne L, Dussault C, Godin A, Maheu-Giroux M, Kronfli N. Implementing opt-out hepatitis C virus (HCV) screening in Canadian provincial prisons: A model-based cost-effectiveness analysis. Int J Drug Policy. 2021;96:103345.

68. Getaz L, Casillas A, Motamed S, Gaspoz JM, Chappuis F, Wolff H. Hepatitis A immunity and region-of-origin in a Swiss prison. Int J Prison Health. 2016;12(2):98–105.

69. European Centre for Disease Prevention and Control, European Monitoring Centre for Drugs and Drug Addiction, editors. Public health guidance on prevention and control of blood-borne viruses in prison settings [Internet]. Stockholm: ECDC and EMCDDA; 2018 [cited 2024 Aug 4]. 60 p. (ECDC scientific advice). Available from: https://data.europa.eu/doi/10.2900/042079.

70. Federal Bureau of Prisons. Hepatitis A Clinical Guidance. 2019 [cited 2024 Aug 4]; Available from: https://www.bop.gov/resources/pdfs/hepatitis_a_cpg_112019.pdf.

71. Workowski KA, Bachmann LH, Chan PA, Johnston CM, Muzny CA, Park I, et al. Sexually Transmitted Infections Treatment Guidelines, 2021: Persons in Correctional Facilities. MMWR Recomm Rep. 2021 Jul 23;70(4):22–3.

72. Crespo J, Lázaro P, Blasco AJ, Aguilera A, García-Samaniego J, Eiros JM, et al. Hepatitis C reflex testing in Spain in 2019: A story of success. Enfermedades infecciosas y microbiologia clinica (English ed). 2021 Mar 1;39(3):119–26.

73. Trickey A, Fajardo E, Alemu D, Artenie AA, Easterbrook P. Impact of hepatitis C virus point-of-care RNA viral load testing compared with laboratory-based testing on uptake of RNA testing and treatment, and turnaround times: a systematic review and meta-analysis. The Lancet Gastroenterology & Hepatology. 2023 Mar 1;8(3):253–70.

74. Catlett B, Hajarizadeh B, Cunningham E, Wolfson-Stofko B, Wheeler A, Khandaker-Hussain B, et al. Diagnostic Accuracy of Assays Using Point-of-Care Testing or Dried Blood Spot Samples for the Determination of Hepatitis C Virus RNA: A Systematic Review. The Journal of Infectious Diseases. 2022 Sep 15;226(6):1005–21.

75. Harris M, McDonald B, Rhodes T. Hepatitis C testing for people who inject drugs in the United Kingdom: Why is uptake so low? Drugs: Education, Prevention and Policy [Internet]. 2014 Aug 1 [cited 2024 Jun 7]; Available from: https://www.tandfonline.com/doi/abs/10.3109/09687637.2014.899988.

76. Tuaillon E, Kania D, Pisoni A, Bollore K, Taieb F, Ontsira Ngoyi EN, et al. Dried Blood Spot Tests for the Diagnosis and Therapeutic Monitoring of HIV and Viral Hepatitis B and C. Front Microbiol [Internet]. 2020 Mar 9 [cited 2024 Jun 7];11. Available from: https://www.frontiersin.org/journals/microbiology/articles/10.3389/fmicb.2020.00373/full.

77. Craine N, Whitaker R, Perrett S, Zou L, Hickman M, Lyons M. A stepped wedge cluster randomized control trial of dried blood spot testing to improve the uptake of hepatitis C antibody testing within UK prisons. Eur J Public Health. 2015;25(2):351–7.

78. Coats JT, Dillon JF. The effect of introducing point-of-care or dried blood spot analysis on the uptake of hepatitis C virus testing in high-risk populations: A systematic review of the literature. Int J Drug Policy. 2015;26(11):1050–5.

79. World Health Organization. Regional Office for Europe. Principles for making prisons and places of detention resilient to infectious diseases, including epidemic and pandemic threats [Internet]. Copenhagen: WHO Regional Office for Europe; 2023 [cited 2024 Jul 28]. 64 p. Available from: https://www.who.int/europe/publications/i/item/WHO-EURO-2023-8262-48034-71157.

80. Shih STF, Cheng Q, Carson J, Valerio H, Sheehan Y, Gray RT, et al. Optimizing point-of-care testing strategies for diagnosis and treatment of hepatitis C virus infection in Australia: a model-based cost-effectiveness analysis. Lancet Reg Health West Pac. 2023;36:100750.

81. Grebely J, Robaeys G, Bruggmann P, Aghemo A, Backmund M, Bruneau J, et al. Recommendations for the management of hepatitis C virus infection among people who inject drugs. Int J Drug Policy. 2015 Oct;26(10):1028–38.

82. Halford R, Christensen L, Cox S, Sheehan J, Brew I, Gillyon-Powell M, et al. Chronic hepatitis C elimination prison initiative: HCV-intensive test and treat, a whole prisoner population HCV test-and-treat program in England. Health Sci Rep. 2023 Dec;6(12):e1724.

83. Wallis C, O'Flynn M, Fenech M, Grimstrup D. Hepatitis C virus point-of-care RNA testing: Experience from screening an entire high-security Australian prison population over 3 days. Aust N Z J Public Health. 2023;47(5):100083.

84. Ward Z, Mafirakureva N, Stone J, Keevans M, Betts-Symonds G, Crowley D, et al. Cost-effectiveness of mass screening for Hepatitis C virus among all inmates in an Irish prison. Int J Drug Policy. 2021;96:103394.

85. Crowley D, Van Hout MC, Lambert JS, Kelly E, Murphy C, Cullen W. Barriers and facilitators to hepatitis C (HCV) screening and treatment-a description of prisoners' perspective. Harm Reduct J. 2018;15(1):62.

86. Crowley D, Murtagh R, Cullen W, Keevans M, Laird E, McHugh T, et al. Evaluating peer-supported screening as a hepatitis C case-finding model in prisoners. Harm Reduct J. 2019;16(1):42.

87. Bagnall AM, South J, Hulme C, Woodall J, Vinall-Collier K, Raine G, et al. A systematic review of the effectiveness and cost-effectiveness of peer education and peer support in prisons. BMC Public Health. 2015 Mar 25;15(1):290.

88. WHO Media Team. WHO prequalifies the first self-test for hepatitis C virus [Internet]. 2024 [cited 2024 Aug 4]. Available from: https://www.who.int/news/item/10-07-2024-who-prequalifies-the-first-self-test-for-hepatitis-c-virus.

89. Stanciu C, Muzica CM, Girleanu I, Cojocariu C, Sfarti C, Singeap AM, et al. An update on direct antiviral agents for the treatment of hepatitis C. Expert Opin Pharmacother. 2021 Sep;22(13):1729–41.

90. Rosati S, Wong A, Marco VD, Pérez-Hernandez P, MacEdo G, Brixko C, et al. Real-world effectiveness of sofosbuvir/velpatasvir for the treatment of hepatitis C virus in prison settings. Future Virology. 2022;17(7):419–28.

91. Mohamed Z, Al-Kurdi D, Nelson M, Shimakawa Y, Selvapatt N, Lacey J, et al. Time matters: Point of care screening and streamlined linkage to care dramatically improves hepatitis C treatment uptake in prisoners in England. Int J Drug Policy. 2020;75:102608.

92. Overton K, Clegg J, Pekin F, Wood J, McGrath C, Lloyd A, et al. Outcomes of a nurse-led model of care for hepatitis C assessment and treatment with direct-acting antivirals in the custodial setting. Int J Drug Policy. 2019;72:123–8.

93. Papaluca T, McDonald L, Craigie A, Gibson A, Desmond P, Wong D, et al. Outcomes of treatment for hepatitis C in prisoners using a nurse-led, statewide model of care. J Hepatol. 2019;70(5):839–46.

94. Akiyama MJ, Ross J, Rimawi F, Fox A, Jordan AO, Wiersema J, et al. Knowledge, attitudes, and acceptability of direct-acting antiviral hepatitis C treatment among people incarcerated in jail: A qualitative study. PLoS One. 2020;15(12):e0242623.

95. Sheehan Y, Lafferty L, Tedla N, Byrne M, Dawson O, Stewart S, et al. Development of an evidence-based hepatitis C education program to enhance public health literacy in the Australian prison sector: The Hepatitis in Prisons Education program (HepPEd). International Journal of Drug Policy. 2024 Jul 1;129:104461.

96. Lafferty L, Rance J, Dore GJ, Grebely J, Lloyd AR, Treloar C. Hepatitis C treatment as prevention in the prison setting: Assessments of acceptability of treatment scale up efforts by prison correctional and health personnel. Int J Drug Policy. 2021;98:103379.

97. Rance J, Lafferty L, Treloar C. Expert stakeholder perspectives on the acceptability of treatment-as-prevention in prison: a qualitative substudy of the "Surveillance and Treatment of Prisoners with Hepatitis C" project (SToP-C). Addiction. 2021;116(10):2761–9.

98. Hajarizadeh B, Grebely J, Byrne M, Marks P, Amin J, McManus H, et al. Evaluation of hepatitis C treatment-as-prevention within Australian prisons (SToP-C): a prospective cohort study. Lancet Gastroenterol Hepatol. 2021;6(7):533–46.

99. AASLD-IDSA HCV Guidance Panel, Chung RT, Ghany MG, Kim AY, Marks KM, Naggie S, et al. Hepatitis C Guidance 2018 Update: AASLD-IDSA Recommendations for Testing, Managing, and Treating Hepatitis C Virus Infection. Clinical Infectious Diseases. 2018 Oct 30;67(10):1477–92.

100. AASLD-IDSA. HCV Testing and Linkage to Care [Internet]. 2022 [cited 2024 Jul 12]. Available from: https://www.hcvguidelines.org/evaluate/testing-and-linkage.

101. Papaluca T, Craigie A, McDonald L, Edwards A, MacIsaac M, Holmes JA, et al. Non-invasive fibrosis algorithms are clinically useful for excluding cirrhosis in prisoners living with hepatitis C. PLoS One. 2020;15(11):e0242101.

102. Lafferty L, Cochrane A, Sheehan Y, Treloar C, Grebely J, Lloyd AR. "That was quick, simple, and easy": Patient perceptions of acceptability of point-of-care hepatitis C RNA testing at a reception prison. Int J Drug Policy. 2022;99:103456.

103. Oru E, Trickey A, Shirali R, Kanters S, Easterbrook P. Decentralisation, integration, and task-shifting in hepatitis C virus infection testing and treatment: a global systematic review and meta-analysis. Lancet Glob Health. 2021 Feb 24;9(4):e431–45.

104. European Association for the Study of the Liver. EASL Clinical Practice Guidelines on non-invasive tests for evaluation of liver disease severity and prognosis - 2021 update. J Hepatol. 2021 Sep;75(3):659–89.

105. Martinello M, Hajarizadeh B, Grebely J, Dore GJ, Matthews GV. Management of acute HCV infection in the era of direct-acting antiviral therapy. Nat Rev Gastroenterol Hepatol. 2018 Jul;15(7):412–24.

106. Singal AG, Llovet JM, Yarchoan M, Mehta N, Heimbach JK, Dawson LA, et al. AASLD Practice Guidance on prevention, diagnosis, and treatment of hepatocellular carcinoma. Hepatology. 2023 Dec;78(6):1922.

107. European Association for the Study of the Liver. EASL Clinical Practice Guidelines: Management of hepatocellular carcinoma. J Hepatol. 2018 Jul;69(1):182–236.

108. Reiberger T, Lens S, Cabibbo G, Nahon P, Zignego AL, Deterding K, et al. EASL position paper on clinical follow-up after HCV cure. Journal of Hepatology. 2024 Jun 5;24:S0168-8278.

109. Palmer A, Papaluca T, Stoové M, Winter R, Pedrana A, Hellard M, et al. A costing analysis of a state-wide, nurse-led hepatitis C treatment model in prison. Int J Drug Policy. 2021;94:103203.

110. Kelly C, Templeton M, Allen K, Lohan M. Improving sexual healthcare delivery for men in prison: A nurse-led initiative. J Clin Nurs. 2020;29(13–14):2285–92.

111. Cuadrado A, Llerena S, Cobo C, Pallás JR, Mateo M, Cabezas J, et al. Microenvironment Eradication of Hepatitis C: A Novel Treatment Paradigm. Am J Gastroenterol. 2018;113(11):1639–48.

112. Cuadrado A, Cobo C, Mateo M, Blasco AJ, Cabezas J, Llerena S, et al. Telemedicine efficiently improves access to hepatitis C management to achieve HCV elimination in the penitentiary setting. Int J Drug Policy. 2021;88:103031.

113. Syed TA, Cherian R, Lewis S, Sterling RK. Telemedicine HCV treatment in department of corrections results in high SVR in era of direct-acting antivirals. J Viral Hepat. 2021;28(1):209–12.

114. Arora S, Thornton K, Jenkusky SM, Parish B, Scaletti JV. Project ECHO: linking university specialists with rural and prison-based clinicians to improve care for people with chronic hepatitis C in New Mexico. Public Health Rep. 2007;122 Suppl 2(Suppl 2):74–7.

115. Saiz de la Hoya P, Portilla J, Marco A, García-Guerrero J, Faraco I, Antón J, et al. Directly observed therapy for chronic hepatitis C: a randomized clinical trial in the prison setting. Gastroenterol Hepatol. 2014;37(8):443–51.

116. Solomon SS, Wagner-Cardoso S, Smeaton L, Sowah LA, Wimbish C, Robbins G, et al. A minimal monitoring approach for the treatment of hepatitis C virus infection (ACTG A5360 [MINMON]): a phase 4, open-label, single-arm trial. The Lancet Gastroenterology & Hepatology. 2022 Apr 1;7(4):307–17.

117. AASLD-IDSA. Monitoring Patients Who Are Starting HCV Treatment, Are on Treatment, or Have Completed Therapy [Internet]. 2023 [cited 2024 Jul 12]. Available from: https://www.hcvguidelines.org/evaluate/monitoring.

118. Gane E, de Ledinghen V, Dylla DE, Rizzardini G, Shiffman ML, Barclay ST, et al. Positive predictive value of sustained virologic response 4 weeks posttreatment for achieving sustained virologic response 12 weeks posttreatment in patients receiving glecaprevir/pibrentasvir in Phase 2 and 3 clinical trials. Journal of Viral Hepatitis. 2021;28(11):1635–42.

119. Yoshida EM, Sulkowski MS, Gane EJ, Herring RWJ, Ratziu V, Ding X, et al. Concordance of sustained virological response 4, 12, and 24 weeks post treatment with sofosbuvir containing regimens for hepatitis C virus. Hepatology. 2015 Jan;61(1):41.

120. Sulkowski M, Feld J, Reau N, Scherbakovsky S, Hernandez C, Vanstraelen K, et al. Concordance Between SVR4, SVR12, and SVR24 in HCV-Infected Patients Who Received Fixed-Dose Combination Sofosbuvir/Velpatasvir in Phase 3 Clinical Trials [Poster PO-983] [Internet]. International Liver Congress 2021; 2021; Vienna. Available from: dx.doi.org/10.1016/S0168-8278(21)01843-2.

121. Lin CP, Liang PC, Huang CI, Yeh ML, Hsu PY, Hsu CT, et al. Concordance of SVR12, SVR24 and SVR durability in Taiwanese chronic hepatitis C patients with direct-acting antivirals. PLoS One. 2021 Feb 4;16(2):e0245479.

122. Franchis R de, Bosch J, Garcia-Tsao G, Reiberger T, Ripoll C, Abraldes JG, et al. Baveno VII – Renewing consensus in portal hypertension. Journal of Hepatology. 2022 Apr 1;76(4):959–74.

123. Bhandari R, Morey S, Hamoodi A, Thompson C, Jones D, Hewett M, et al. High rate of hepatitis C reinfection following antiviral treatment in the North East England Prisons. J Viral Hepat. 2020;27(4):449–52.

124. Carson JM, Dore GJ, Lloyd AR, Grebely J, Byrne M, Cunningham E, et al. Hepatitis C Virus Reinfection Following Direct-Acting Antiviral Treatment in the Prison Setting: The SToP-C Study. Clin Infect Dis. 2022;75(10):1809–19.

125. Griffin S, Wilkinson AL, Winter R, Hajarizadeh B, MacIsaac M, Papaluca T, et al. Contribution of prison-based hepatitis C treatment initiations to overall treatment uptake in Victoria, Australia. The Lancet Regional Health – Western Pacific [Internet]. 2024 Jul 1 [cited 2024 Jul 14];48. Available from: https://www.thelancet.com/journals/lanwpc/article/PIIS2666-6065(24)00133-0/fulltext.

126. Marco A, Guerrero RA, Vergara M, Gallego C, Solé C, Planella R, et al. Reinfection in a large cohort of prison inmates with sustained virological response after treatment of chronic hepatitis C in Catalonia (Spain), 2002-2016. Int J Drug Policy. 2019;72:189–94.

127. Sarin SK, Kumar M, Lau GK, Abbas Z, Chan HLY, Chen CJ, et al. Asian-Pacific clinical practice guidelines on the management of hepatitis B: a 2015 update. Hepatol Int. 2016 Jan;10(1):1–98.

128. Terrault NA, Lok ASF, McMahon BJ, Chang K, Hwang JP, Jonas MM, et al. Update on prevention, diagnosis, and treatment of chronic hepatitis B: AASLD 2018 hepatitis B guidance. Hepatology. 2018 Apr;67(4):1560–99.

129. Guidelines for the prevention, diagnosis, care and treatment for people with chronic hepatitis B infection [Internet]. Geneva: World Health Organization; 2024 [cited 2024 Jun 9]. 272 p. Available from: https://www.who.int/publications/i/item/9789240090903.

130. European Association for the Study of the Liver. EASL Clinical Practice Guidelines on hepatitis delta virus. J Hepatol. 2023 Aug;79(2):433–60.

131. Chan J, Kaba F, Schwartz J, Bocour A, Akiyama MJ, Rosner Z, et al. The hepatitis C virus care cascade in the New York City jail system during the direct acting antiviral treatment era, 2014-2017. EClinicalMedicine. 2020;27:100567.

132. Aspinall EJ, Mitchell W, Schofield J, Cairns A, Lamond S, Bramley P, et al. A matched comparison study of hepatitis C treatment outcomes in the prison and community setting, and an analysis of the impact of prison release or transfer during therapy. J Viral Hepat. 2016;23(12):1009–16.

133. Chan J, Schwartz J, Kaba F, Bocour A, Akiyama MJ, Hobstetter L, et al. Outcomes of Hepatitis C Virus Treatment in the New York City Jail Population: Successes and Challenges Facing Scale up of Care. Open Forum Infect Dis. 2020;7(7):ofaa263.

134. Assoumou SA, Tasillo A, Vellozzi C, Eftekhari Yazdi G, Wang J, Nolen S, et al. Cost-effectiveness and Budgetary Impact of Hepatitis C Virus Testing, Treatment, and Linkage to Care in US Prisons. Clin Infect Dis. 2020;70(7):1388–96.

135. Mohamed Z, Scott N, Al-Kurdi D, Selvapatt N, Thursz MR, Lemoine M, et al. Cost-effectiveness of strategies to improve HCV screening, linkage-to-care and treatment in remand prison settings in England. Liver Int. 2020;40(12):2950–60.

136. Ahmad A, Bromberg DJ, Shrestha R, Salleh NM, Bazazi AR, Kamarulzaman A, et al. Higher methadone dose at time of release from prison predicts linkage to maintenance treatment for people with HIV and opioid use disorder transitioning to the community in Malaysia. Int J Drug Policy. 2024 Apr;126:104369.

137. McKeever A, O'Donovan D, Kee F. Factors influencing compliance with Hepatitis C treatment in patients transitioning from prison to community-A summary scoping review. J Viral Hepat. 2023;30(4):278–82.

138. Kronfli N, Linthwaite B, Kouyoumdjian F, Klein MB, Lebouché B, Sebastiani G, et al. Interventions to increase testing, linkage to care and treatment of hepatitis C virus (HCV) infection among people in prisons: A systematic review. Int J Drug Policy. 2018;57:95–103.

139. Nyamathi AM, Zhang S, Salem BE, Farabee D, Hall B, Marlow E, et al. A randomized clinical trial of tailored interventions for health promotion and recidivism reduction among homeless parolees: outcomes and cost analysis. J Exp Criminol. 2016 Mar 1;12(1):49–74.

140. Porter LC, Testa A, Kozerra M, Philippon C, Remrey L, Bijole P, et al. "I got so much on my plate": Understanding care discontinuity for HIV and HCV among formerly incarcerated persons. Health Serv Res. 2023;58(4):865–72.

141. Cepeda JA, Niccolai LM, Lyubimova A, Kershaw T, Levina O, Heimer R. High-risk behaviors after release from incarceration among people who inject drugs in St. Petersburg, Russia. Drug Alcohol Depend. 2015;147:196–202.

142. Akiyama MJ, Columbus D, MacDonald R, Jordan AO, Schwartz J, Litwin AH, et al. Linkage to hepatitis C care after incarceration in jail: a prospective, single arm clinical trial. BMC Infect Dis. 2019;19(1):703.

143. Jordan AO, Cohen LR, Harriman G, Teixeira PA, Cruzado-Quinones J, Venters H. Transitional care coordination in New York City jails: facilitating linkages to care for people with HIV returning home from Rikers Island. AIDS Behav. 2013 Oct;17 Suppl 2:S212-219.

144. Papaluca T, Craigie A, McDonald L, Edwards A, Winter R, Hoang A, et al. Care Navigation Increases Initiation of Hepatitis C Treatment After Release From Prison in a Prospective Randomized Controlled Trial: The C-LINK Study. Open Forum Infect Dis. 2022;9(8):ofac350.

145. Cabezas J, Llerena S, Mateo M, Álvarez R, Cobo C, González V, et al. Hepatitis C Micro-Elimination beyond Prison Walls: Navigator-Assisted Test-and-Treat Strategy for Subjects Serving Non-Custodial Sentences. Diagnostics (Basel). 2021;11(5).

146. Borschmann R, Keen C, Spittal MJ, Preen D, Pirkis J, Larney S, et al. Rates and causes of death after release from incarceration among 1 471 526 people in eight high-income and middle-income countries: an individual participant data meta-analysis. The Lancet. 2024 May 4;403(10438):1779–88.

147. Azbel L, Wickersham JA, Grishaev Y, Dvoryak S, Altice FL. Burden of infectious diseases, substance use disorders, and mental illness among Ukrainian prisoners transitioning to the community. PLoS One. 2013;8(3):e59643.

148. Beckwith CG, Kurth AE, Bazerman LB, Patry EJ, Cates A, Tran L, et al. A pilot study of rapid hepatitis C virus testing in the Rhode Island Department of Corrections. J Public Health (Oxf). 2016;38(1):130–7.

149. Cocoros N, Nettle E, Church D, Bourassa L, Sherwin V, Cranston K, et al. Screening for Hepatitis C as a Prevention Enhancement (SHAPE) for HIV: an integration pilot initiative in a Massachusetts County correctional facility. Public Health Rep. 2014;129 Suppl 1(Suppl 1):5–11.

150. Connoley D, Francis-Graham S, Storer M, Ekeke N, Smith C, Macdonald D, et al. Detection, stratification and treatment of hepatitis C-positive prisoners in the United Kingdom prison estate: Development of a pathway of care to facilitate the elimination of hepatitis C in a London prison. J Viral Hepat. 2020;27(10):987–95.

151. Crowley D, Cullen W, Lambert JS, Van Hout MC. Competing priorities and second chances - A qualitative exploration of prisoners' journeys through the Hepatitis C continuum of care. PLoS One. 2019;14(9):e0222186.

152. Hochstatter KR, Stockman LJ, Holzmacher R, Greer J, Seal DW, Taylor QA, et al. The continuum of hepatitis C care for criminal justice involved adults in the DAA era: a retrospective cohort study demonstrating limited treatment uptake and inconsistent linkage to community-based care. Health Justice. 2017;5(1):10.

153. Schoenbachler BT, Smith BD, Seña AC, Hilton A, Bachman S, Lunda M, et al. Hepatitis C Virus Testing and Linkage to Care in North Carolina and South Carolina Jails, 2012-2014. Public Health Rep. 2016;131 Suppl 2(Suppl 2):98–104.

154. Stone J, Fraser H, Young AM, Havens JR, Vickerman P. Modeling the role of incarceration in HCV transmission and prevention amongst people who inject drugs in rural Kentucky. Int J Drug Policy. 2021;88:102707.

155. Curtis M, Wilkinson AL, Dietze P, Stewart AC, Kinner SA, Winter RJ, et al. Is use of opioid agonist treatment associated with broader primary healthcare use among men with recent injecting drug use histories following release from prison? A prospective cohort study. Harm Reduct J. 2023;20(1):42.

156. Nyamathi A, Salem BE, Zhang S, Farabee D, Hall B, Khalilifard F, et al. Nursing case management, peer coaching, and hepatitis a and B vaccine completion among homeless men recently released on parole: randomized clinical trial. Nurs Res. 2015;64(3):177–89.

157. Hariri S, Sharafi H, Sheikh M, Merat S, Hashemi F, Azimian F, et al. Continuum of hepatitis C care cascade in prison and following release in the direct-acting antivirals era. Harm Reduct J. 2020;17(1):80.

158. Stewart AC, Cossar R, Walker S, Wilkinson AL, Quinn B, Dietze P, et al. Strategies to maximise study retention and limit attrition bias in a prospective cohort study of men reporting a history of injecting drug use released from prison: the prison and transition health study. BMC Med Res Methodol. 2021;21(1):185.

159. Montague BT, Rosen DL, Sammartino C, Costa M, Gutman R, Solomon L, et al. Systematic Assessment of Linkage to Care for Persons with HIV Released from Corrections Facilities Using Existing Datasets. AIDS Patient Care STDS. 2016 Feb 1;30(2):84–91.

160. Delile JM, de Ledinghen V, Jauffret-Roustide M, Roux P, Reiller B, Foucher J, et al. Hepatitis C virus prevention and care for drug injectors: the French approach. Hepatol Med Policy. 2018 Jun 5;3:7.

161. Moazen B, Saeedi Moghaddam S, Silbernagl MA, Lotfizadeh M, Bosworth RJ, Alammehrjerdi Z, et al. Prevalence of Drug Injection, Sexual Activity, Tattooing, and Piercing Among Prison Inmates. Epidemiol Rev. 2018;40(1):58–69.

162. Bukten A, Lund IO, Kinner SA, Rognli EB, Havnes IA, Muller AE, et al. Factors associated with drug use in prison – results from the Norwegian offender mental health and addiction (NorMA) study. Health & Justice. 2020 May 12;8(1):10.

163. Favril L. Drug use before and during imprisonment: Drivers of continuation. Int J Drug Policy. 2023 May;115:104027.

164. Montanari L, Royuela L, Mazzilli S, Vandam L, Alvarez E, Llorens N, et al. Prevalence of drug use before and during imprisonment in seven European countries (2014-2018). J Community Psychol. 2023 May 12;.

165. Søholm J, Holm DK, Mössner B, Madsen LW, Hansen JF, Weis N, et al. Incidence, prevalence and risk factors for hepatitis C in Danish prisons. PLoS One. 2019;14(7):e0220297.

166. Kirwan A, Curtis M, Dietze P, Aitken C, Woods E, Walker S, et al. The Prison and Transition Health (PATH) Cohort Study: Study Protocol and Baseline Characteristics of a Cohort of Men with a History of Injecting Drug Use Leaving Prison in Australia. J Urban Health. 2019 Jun;96(3):400–10.

167. Michel L, Trouiller P, Chollet A, Molinier M, Duchesne L, Jauffret-Roustide M, et al. Self-reported injection practices among people who use drugs in French prisons: Public health implications (ANRS-Coquelicot survey 2011–2013). Drug and Alcohol Review. 2018;37(S1):S268–76.

168. Carpentier C, Royuela L, Montanari L, Davis P. The Global Epidemiology of Drug Use in Prison. In: Kinner SA, Rich JDJ, editors. Drug Use in Prisoners: Epidemiology, Implications, and Policy Responses [Internet]. Oxford University Press; 2018 [cited 2024 Jun 6]. p. 0. Available from: https://doi.org/10.1093/med/9780199374847.003.0002.

169. Boys A, Farrell M, Bebbington P, Brugha T, Coid J, Jenkins R, et al. Drug use and initiation in prison: results from a national prison survey in England and Wales. Addiction. 2002 Dec;97(12):1551–60.

170. Altice FL, Azbel L, Stone J, Brooks-Pollock E, Smyrnov P, Dvoriak S, et al. The perfect storm: incarceration and the high-risk environment perpetuating transmission of HIV, hepatitis C virus, and tuberculosis in Eastern Europe and Central Asia. Lancet. 2016;388(10050):1228–48.

171. Basic Principles for the Treatment of Prisoners, UN Resolution A/RES/45/111 [Internet]. 1990 [cited 2024 Jun 6]. Available from: https://documents.un.org/doc/resolution/gen/nr0/565/00/img/nr056500.pdf?token=wdimjY8v8mzoRKd1sJ&fe=true.

172. Colledge-Frisby S, Ottaviano S, Webb P, Grebely J, Wheeler A, Cunningham EB, et al. Global coverage of interventions to prevent and manage drug-related harms among people who inject drugs: a systematic review. The Lancet Global Health. 2023 May;11(5):e673–83.

173. The Global State of Harm Reduction 2022 [Internet]. Harm Reduction International; 2022 [cited 2024 Jun 6]. Available from: https://hri.global/wp-content/uploads/2022/11/HRI_GSHR-2022_Full-Report_Final.pdf.

174. HIV Modelling Consortium Treatment as Prevention Editorial Writing Group. HIV treatment as prevention: models, data, and questions--towards evidence-based decision-making. PLoS Med. 2012;9(7):e1001259.

175. Stone J, Martin NK, Hickman M, Hutchinson SJ, Aspinall E, Taylor A, et al. Modelling the impact of incarceration and prison-based hepatitis C virus (HCV) treatment on HCV transmission among people who inject drugs in Scotland. Addiction. 2017;112(7):1302–14.

176. Lim AG, Stone J, Hajarizadeh B, Byrne M, Chambers GM, Martin NK, et al. Evaluating the Prevention Benefit of HCV Treatment: Modeling the SToP-C Treatment as Prevention Study in Prisons. Hepatology. 2021;74(5):2366–79.

177. Bretaña NA, Gray RR, Cunningham EB, Betz-Stablein B, Ribeiro R, Graw F, et al. Combined treatment and prevention strategies for hepatitis C virus elimination in the prisons in New South Wales: a modelling study. Addiction. 2020;115(5):901–13.

178. Dalgic OO, Samur S, Spaulding AC, Llerena S, Cobo C, Ayer T, et al. Improved Health Outcomes from Hepatitis C Treatment Scale-Up in Spain's Prisons: A Cost-Effectiveness Study. Sci Rep. 2019;9(1):16849.

179. Shih STF, Stone J, Martin NK, Hajarizadeh B, Cunningham EB, Kwon JA, et al. Scale-up of Direct-Acting Antiviral Treatment in Prisons Is Both Cost-effective and Key to Hepatitis C Virus Elimination. Open Forum Infectious Diseases. 2024 Feb 1;11(2):ofad637.

180. Recommended package of interventions for HIV, viral hepatitis and STI prevention, diagnosis, treatment and care for people who inject drugs. In: Consolidated guidelines on HIV, viral hepatitis and STI prevention, diagnosis, treatment and care for key populations [Internet]. Geneva: World Health Organization; 2023. Available from: https://iris.who.int/bitstream/handle/10665/370569/9789240075597-eng.pdf.

181. Hedrich D, Alves P, Farrell M, Stöver H, Møller L, Mayet S. The effectiveness of opioid maintenance treatment in prison settings: a systematic review. Addiction. 2012;107(3):501–17.

182. Hagan H, Pouget ER, Des Jarlais DC. A Systematic Review and Meta-Analysis of Interventions to Prevent Hepatitis C Virus Infection in People Who Inject Drugs. The Journal of Infectious Diseases. 2011 Jul 1;204(1):74–83.

183. Larney S. Does opioid substitution treatment in prisons reduce injecting-related HIV risk behaviours? A systematic review. Addiction. 2010;105(2):216–23.

184. Palmateer N, Hamill V, Bergenstrom A, Bloomfield H, Gordon L, Stone J, et al. Interventions to prevent HIV and Hepatitis C among people who inject drugs: Latest evidence of effectiveness from a systematic review (2011 to 2020). International Journal of Drug Policy. 2022 Nov 1;109:103872.

185. Jürgens R, World Health Organization, UNAIDS, UNODC. Interventions to address HIV in prisons : drug dependence treatments. 2007;32.

186. Curtis M, Wilkinson AL, Dietze P, Stewart AC, Kinner SA, Cossar RD, et al. Prospective study of retention in opioid agonist treatment and contact with emergency healthcare following release from prisons in Victoria, Australia. Emerg Med J. 2023;40(5):347–54.

187. European Monitoring Centre for Drugs and Drug Addiction, Montanari L, Royuela L, Hasselberg I, Vandam L. Prison and drugs in Europe: current and future challenges [Internet]. Publications Office of the European Union; 2022 [cited 2024 Aug 28]. Available from: https://data.europa.eu/doi/10.2810/420042.

188. World Health Organization. WHO, UNODC, UNAIDS technical guide for countries to set targets for universal access to HIV prevention, treatment and care for injecting drug users – 2012 revision [Internet]. Geneva: World Health Organization; 2012 [cited 2024 Jun 7]. Available from: https://iris.who.int/handle/10665/77969.

189. Correctional Service of Canada. Opioid Agonist Treatment: March 2024 [Internet]. 2024 [cited 2024 Jun 7]. Available from: https://www.canada.ca/en/correctional-service/programs/offenders/health-services/opioid-agonist-treatment/2024-03.html.

190. Curtis M, Dietze P, Wilkinson AL, Agius PA, Stewart AC, Cossar RD, et al. Discontinuation of opioid agonist treatment following release from prison in a cohort of men who injected drugs prior to imprisonment in Victoria, Australia: A discrete-time survival analysis. Drug Alcohol Depend. 2023;242:109730.

191. Martin RA, Berk J, Rich JD, Kang A, Fritsche J, Clarke JG. Use of long-acting injectable buprenorphine in the correctional setting. Journal of Substance Abuse Treatment [Internet]. 2022 Nov 1 [cited 2024 Jun 7];142. Available from: https://www.jsatjournal.com/article/S0740-5472(22)00133-7/abstract.

192. Dunlop A. The UNLOC-T Trial: Implementing Depot Buprenorphine in NSW Correctional Facilities. In 2021 [cited 2024 Jun 7]. Available from: https://airdrive.eventsair.com/eventsairaueprod/production-ashm-public/391caa0b07014021b6cfdf95dadd4fbb.

193. Ling R, White B, Roberts J, Cretikos M, Howard MV, Haber PS, et al. Depot buprenorphine as an opioid agonist therapy in New South Wales correctional centres: a costing model. BMC Health Serv Res. 2022 Nov 8;22(1):1326.

194. Lee JD, Malone M, McDonald R, Cheng A, Vasudevan K, Tofighi B, et al. Comparison of Treatment Retention of Adults With Opioid Addiction Managed With Extended-Release Buprenorphine vs Daily Sublingual Buprenorphine-Naloxone at Time of Release From Jail. JAMA Network Open. 2021 Sep 8;4(9):e2123032.

195. Russell C, Nafeh F, Pang M, MacDonald SF, Derkzen D, Rehm J, et al. Opioid agonist treatment (OAT) experiences and release plans among federally incarcerated individuals with opioid use disorder (OUD) in Ontario, Canada: a mixed-methods study. BMC Public Health. 2022 Mar 4;22(1):436.

196. Platt L, Minozzi S, Reed J, Vickerman P, Hagan H, French C, et al. Needle syringe programmes and opioid substitution therapy for preventing hepatitis C transmission in people who inject drugs. Cochrane Database Syst Rev. 2017 Sep 18;9(9):CD012021.

197. Lazarus JV, Safreed-Harmon K, Hetherington KL, Bromberg DJ, Ocampo D, Graf N, et al. Health Outcomes for Clients of Needle and Syringe Programs in Prisons. Epidemiologic Reviews. 2018;40(1):96–104.

198. Moazen B, Dolan K, Saeedi Moghaddam S, Lotfizadeh M, Duke K, Neuhann F, et al. Availability, Accessibility, and Coverage of Needle and Syringe Programs in Prisons in the European Union. Epidemiol Rev. 2020 Jan 31;42(1):19–26.

199. de la Fuente L, Bravo MJ, Jiménez-Mejías E, Sordo L, Pulido J, Barrio G. [Evolution of the need and coverage of opioid substitution treatments and needle exchange programmes in Spanish prisons, 1992-2009]. Rev Esp Sanid Penit. 2012;14(2):67–77.

200. Hoffmann P, Arendt V, Fischer A, Menster M, Etienne V, Meyers J, et al. Combination disease prevention in prisons: a comprehensive programme in Luxembourg. In: Compendium of good practices in the health sector response to viral hepatitis in the WHO European Region [Internet]. WHO Regional Office for Europe; 2020 [cited 2024 Jun 7]. p. 50–3. Available from: https://researchportal.lih.lu/en/publications/combination-disease-prevention-in-prisons-a-comprehensive-program.

201. Johnston MS, Ricciardelli R, Whitten C. "That's Not Rehabilitation, That's Enabling": Correctional Officer Perspectives on the Prison Needle Exchange Program. Criminal Justice and Behavior. 2024 Jan 1;51(1):66–85.

202. Kronfli N, Lafferty L, Leone F, Stoové M, Hajarizadeh B, Lloyd AR, et al. Using nominal group technique to identify perceived barriers and facilitators to improving uptake of the Prison Needle Exchange Program in Canadian federal prisons by correctional officers and healthcare workers. Int J Drug Policy. 2024 Jul 29;130:104540.

203. Lafferty L, Leone F, Stoové M, Lloyd AR, Hajarizadeh B, Altice FL, et al. Using nominal group technique with people who are incarcerated in Canadian federal prisons to identify barriers and solutions to improving Prison Needle Exchange Program uptake. Int J Drug Policy. 2024 Aug;131:104549.

204. Ricciardelli R, Whitten C, Johnston M. "How are we gonna get them off the drugs if they're allowed to stay on it?" Correctional officer perspectives on overdose prevention sites in prisons. Criminal Justice Studies: A Critical Journal of Crime, Law & Society. 2024;37(1):39–58.

205. van der Meulen E, Claivaz-Loranger S, Clarke S, Ollner A, Watson TM. On Point : Recommendations for Prison-Based Needle and Syringe Programs in Canada [Internet]. Toronto Metropolitan University; 2016 Jan [cited 2024 Jun 7]. Available from: https://rshare.library.torontomu.ca/articles/report/On_Point_Recommendations_for_Prison-Based_Needle_and_Syringe_Programs_in_Canada/22728362/1.

206. van der Meulen E, Watson TM, De Shalit A. Insights on Prison Needle and Syringe Programs: Research With Former Prisoners in Canada. The Prison Journal. 2017 Nov 1;97(5):628–43.

207. Whitten C, Ricciardelli R, Johnston MS. "We shouldn't encourage drug use": Unpacking correctional officer opposition and support of the Prison Needle Exchange Program. Social Sciences & Humanities Open. 2023 Jan 1;8(1):100736.

208. Kronfli N, Bromberg DJ, Wolff H, Montanari L, Altice FL. Sustainability of Prison-based Needle and Syringe Programs Globally: The Need for Better Implementation. Lancet Public Health. Under Review.

209. Scott N, McBryde E, Kirwan A, Stoové M. Modelling the Impact of Condom Distribution on the Incidence and Prevalence of Sexually Transmitted Infections in an Adult Male Prison System. PLoS One. 2015;10(12):e0144869.

210. Brook MG. Sexual transmission and prevention of the hepatitis viruses A-E and G. Sex Transm Infect. 1998 Dec;74(6):395–8.

211. Peña-Orellana M, Hernández-Viver A, Caraballo-Correa G, Albizu-García CE. Prevalence of HCV risk behaviors among prison inmates: tattooing and injection drug use. J Health Care Poor Underserved. 2011;22(3):962–82.

212. Jafari S, Copes R, Baharlou S, Etminan M, Buxton J. Tattooing and the risk of transmission of hepatitis C: a systematic review and meta-analysis. International Journal of Infectious Diseases. 2010 Nov 1;14(11):e928–40.

213. Jafari S, Buxton JA, Afshar K, Copes R, Baharlou S. Tattooing and risk of hepatitis B: a systematic review and meta-analysis. Can J Public Health. 2012;103(3):207–12.

214. Tran NT, Dubost C, Baggio S, Gétaz L, Wolff H. Safer tattooing interventions in prisons: a systematic review and call to action. BMC Public Health. 2018 Aug 15;18(1):1015.

215. Testing, treatment and comprehensive prevention – how a nurse-led program is dealing with hepatitis in prisons in Luxembourg [Internet]. 2020 [cited 2024 Jun 7]. Available from: https://www.who.int/europe/news/item/28-07-2020-testing-treatment-and-comprehensive-prevention-how-a-nurse-led-program-is-dealing-with-hepatitis-in-prisons-in-luxembourg.

216. Jürgens R, Gatherer A, Nikogosian H. P-589: Health in Prisons, A WHO Guide to the Essentials in Prison Health. World Health Organization; 2007.

217. HNSW. Use of Fincol in NSW prisons: preventing hep C transmission [Internet]. Hepatitis NSW. 2019 [cited 2024 Jun 7]. Available from: https://www.hep.org.au/blog/use-of-fincol-in-nsw-prisons/.

218. Dolan K, Moazen B, Noori A, Rahimzadeh S, Farzadfar F, Hariga F. People who inject drugs in prison: HIV prevalence, transmission and prevention. Int J Drug Policy. 2015 Feb;26 Suppl 1:S12-15.

219. Sattar SA, Tetro J, Springthorpe VS, Giulivi A. Preventing the spread of hepatitis B and C viruses: where are germicides relevant? Am J Infect Control. 2001 Jun;29(3):187–97.

220. Hagan LM, Montgomery MP, Lauro PL, Cima M, Stringer G, Kupferman NM, et al. Recent Incarceration Among Individuals Infected With Hepatitis A Virus During Person-to-Person Community Outbreaks, United States, 2016-2020. Public Health Rep. 2023;138(4):619–24.

221. Cocco N, Fantozzi MPT, Ihuthia JN, Moazen B, Meroueh F, Barbîroș I, et al. Cancer-preventing vaccination programs in prison: promoting health equity in Europe. The Lancet Regional Health – Europe [Internet]. 2024 Jun 19 [cited 2024 Jul 28];0(0). Available from: https://www.thelancet.com/journals/lanepe/article/PIIS2666-7762(24)00125-X/fulltext.

222. Stasi C, Monnini M, Cellesi V, Salvadori M, Marri D, Ameglio M, et al. Screening for hepatitis B virus and accelerated vaccination schedule in prison: A pilot multicenter study. Vaccine. 2019;37(11):1412–7.

223. Costumbrado J, Stirland A, Cox G, El-Amin AN, Miranda A, Carter A, et al. Implementation of a hepatitis A/B vaccination program using an accelerated schedule among high-risk inmates, Los Angeles County Jail, 2007-2010. Vaccine. 2012;30(48):6878–82.

224. Asli AA, Moghadami M, Zamiri N, Tolide-Ei HR, Heydari ST, Alavian SM, et al. Vaccination against hepatitis B among prisoners in Iran: accelerated vs. classic vaccination. Health Policy. 2011;100(2–3):297–304.

225. Pitt AL, Humphreys K, Brandeau ML. Modeling Health Benefits and Harms of Public Policy Responses to the US Opioid Epidemic. Am J Public Health. 2018 Oct;108(10):1394–400.

226. Chronister KJ, Lintzeris N, Jackson A, Ivan M, Dietze PM, Lenton S, et al. Findings and lessons learnt from implementing Australia's first health service based take-home naloxone program. Drug Alcohol Rev. 2018 May;37(4):464–71.

227. McDonald R, Strang J. Are take-home naloxone programmes effective? Systematic review utilizing application of the Bradford Hill criteria. Addiction. 2016 Jul;111(7):1177–87.

228. Bird SM, McAuley A, Perry S, Hunter C. Effectiveness of Scotland's National Naloxone Programme for reducing opioid-related deaths: a before (2006–10) versus after (2011–13) comparison. Addiction. 2016;111(5):883–91.

229. Curtis M, Dietze P, Aitken C, Kirwan A, Kinner SA, Butler T, et al. Acceptability of prison-based take-home naloxone programmes among a cohort of incarcerated men with a history of regular injecting drug use. Harm Reduct J. 2018 Sep 21;15(1):48.

230. Colledge-Frisby S, Rathnayake K, Nielsen S, Stoove M, Maher L, Agius PA, et al. Injection Drug Use Frequency Before and After Take-Home Naloxone Training. JAMA Netw Open. 2023 Aug 1;6(8):e2327319.

231. WHO. Opioid overdose [Internet]. 2023 [cited 2024 Jun 7]. Available from: https://www.who.int/news-room/fact-sheets/detail/opioid-overdose.

232. Sheehan Y, Cochrane A, Treloar C, Grebely J, Tedla N, Lloyd AR, et al. Understanding hepatitis C virus (HCV) health literacy and educational needs among people in prison to enhance HCV care in prisons. International Journal of Drug Policy. 2024 Aug 1;130:104516.

233. Rance J, Lafferty L, Treloar C. 'Behind closed doors, no one sees, no one knows': hepatitis C, stigma and treatment-as-prevention in prison. Critical Public Health. 2020;30(2):130–40.

234. Vallabhaneni S, Macalino GE, Reinert SE, Schwartzapfel B, Wolf FA, Rich JD. Prisoners' attitudes toward Hepatitis B vaccination. Prev Med. 2004;38(6):828–33.

235. Ellen Perrett S, Erricker M, Lyons M. Evaluation of an e-learning package to improve understanding of blood-borne viruses amongst prison staff in Wales, UK. Int J Prison Health. 2014;10(1):47–54.

236. Crowley D, Van Hout MC, Murphy C, Kelly E, Lambert JS, Cullen W. Hepatitis C virus screening and treatment in Irish prisons from a governor and prison officer perspective - a qualitative exploration. Health Justice. 2018;6(1):23.

237. Pérez CM, del Carmen Santos M, Torres A, Grana C, Albizu-García C. Knowledge of Case Workers and Correctional Officers towards HIV and HCV Infections: Opportunity for Public Health Education in the Correctional System. P R Health Sci J. 2015;34(3):135–41.

238. Atem JN, El Ghaziri M. Enhancing Hepatitis A and B Vaccinations Through Electronic Clinical Decision Support Systems and Staff Education in a Correctional Facility. J Forensic Nurs. 2023;19(4):253–61.

239. Prisons and Health. Copenhagen: World Health Organization Regional Office for Europe; 2014.

240. Thornton K, Sedillo ML, Kalishman S, Page K, Arora S. The New Mexico Peer Education Project: Filling a Critical Gap in HCV Prison Education. J Health Care Poor Underserved. 2018;29(4):1544–57.

241. Shah HA, Abu–Amara M. Education Provides Significant Benefits to Patients With Hepatitis B Virus or Hepatitis C Virus Infection: A Systematic Review. Clinical Gastroenterology and Hepatology. 2013 Aug 1;11(8):922–33.

242. Winter RJ, White B, Kinner SA, Stoové M, Guy R, Hellard ME. A nurse-led intervention improved blood-borne virus testing and vaccination in Victorian prisons. Aust N Z J Public Health. 2016;40(6):592–4.

243. Mushayabasa S, Bhunu CP, Magombedze G, Stewart AGR. On the role of screening and educational campaigns on controlling HCV in correctional institutions. Journal of Biological Systems. 2013;21(1):1350007.

244. Wirtz AL, Yeh PT, Flath NL, Beyrer C, Dolan K. HIV and Viral Hepatitis Among Imprisoned Key Populations. Epidemiol Rev. 2018;40(1):12–26.

245. Fiore V, Rastrelli E, Madeddu G, Ranieri R, De Vito A, Giuliani R, et al. HCV spread among female incarcerated population and treatment pathways to viral elimination in Italian prison settings: clinical perspectives and medico legal aspects. BMC Infect Dis. 2022;22(1):601.

246. United Nations Office on Drugs and Crime. United Nations Rules for the Treatment of Women Prisoners and Non-custodial Measures for Women Offenders (the Bangkok Rules). 2021.

247. Villarroel-Torrico M, Montaño K, Flores-Arispe P, Jeannot E, Flores-León A, Cossio N, et al. Syphilis, human immunodeficiency virus, herpes genital and hepatitis B in a women's prison in Cochabamba, Bolivia: prevalence and risk factors. Rev Esp Sanid Penit. 2018;20(2):47–54.

248. Viitanen P, Vartiainen H, Aarnio J, von Gruenewaldt V, Hakamäki S, Lintonen T, et al. Hepatitis A, B, C and HIV infections among Finnish female prisoners--young females a risk group. J Infect. 2011;62(1):59–66.

249. Macalino GE, Vlahov D, Dickinson BP, Schwartzapfel B, Rich JD. Community incidence of hepatitis B and C among reincarcerated women. Clin Infect Dis. 2005;41(7):998–1002.

250. Kushner T, Reau N. Changing epidemiology, implications, and recommendations for hepatitis C in women of childbearing age and during pregnancy. J Hepatol. 2021 Mar;74(3):734–41.

251. Belopolskaya M, Avrutin V, Kalinina O, Dmitriev A, Gusev D. Chronic hepatitis B in pregnant women: Current trends and approaches. World J Gastroenterol. 2021 Jun 21;27(23):3279–89.

252. Society for Maternal-Fetal Medicine, Hughes BL, Page CM, Kuller JA. Hepatitis C in pregnancy: screening, treatment, and management. Am J Obstet Gynecol. 2017 Nov;217(5):B2–12.

253. Reynolds HW, Sutherland EG. A systematic approach to the planning, implementation, monitoring, and evaluation of integrated health services. BMC Health Services Research. 2013 May 6;13(1):168.

254. Murray J, Cohen AL. Infectious Disease Surveillance. International Encyclopedia of Public Health. 2017;222–9.

255. Health in prisons European database (HIPED) [Internet]. [cited 2024 May 8]. Available from: https://www.who.int/data/region/europe/health-in-prisons-european-database-(hiped)

256. Alves da Costa F, Verschuuren M, Andersen Y, Stürup-Toft S, Lopez-Acuña D, Ferreira-Borges C. The WHO Prison Health Framework: a framework for assessment of prison health system performance. European Journal of Public Health. 2022 Aug 1;32(4):565–70.

257. Spaulding AC, Kennedy SS, Osei J, Sidibeh E, Batina IV, Chhatwal J, et al. Estimates of Hepatitis C Seroprevalence and Viremia in State Prison Populations in the United States. J Infect Dis. 2023;228(Suppl 3):S160–7.

258. Butler T, Boonwaat L, Hailstone S, Falconer T, Lems P, Ginley T, et al. The 2004 Australian prison entrants' blood-borne virus and risk behaviour survey. Aust N Z J Public Health. 2007;31(1):44–50.

259. Butler T, Simpson M. National Prison Entrants Blood Borne Virus Survey Report 2004, 2007, 2010, 2013 and 2016 [Internet]. Kirby Institute; 2017 [cited 2024 May 8]. Available from: https://www.kirby.unsw.edu.au/sites/default/files/documents/JHP_National-Prison-Entrants-Report-2004-2007-2010-2013-2016.pdf.

260. Bah R, Sheehan Y, Li X, Price N, Butler T, Dore GJ, et al. Challenges and facilitators in repeated bio-behavioural surveys for blood-borne virus infections in Australian prisons. International Journal of Drug Policy. 2024 Apr 25;104401.

261. Bah R, Sheehan Y, Li X. Prevalence of blood-borne virus infections and uptake of hepatitis C testing and treatment in Australian prisons: the AusHep Study. 2024 Submitted;

262. World Health Organization. WHO handbook for guideline development [Internet]. 2nd ed. Geneva: World Health Organization; 2014 [cited 2024 Jun 9]. 167 p. Available from: https://iris.who.int/handle/10665/145714.

263. Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ. 2021 Mar 29;372:n71.

264. Covidence systematic review software [Internet]. Melbourne, Australia: Veritas Health Innovation; 2024. Available from: www.covidence.org.

265. Guyatt GH, Oxman AD, Kunz R, Vist GE, Falck-Ytter Y, Schünemann HJ. What is "quality of evidence" and why is it important to clinicians? BMJ. 2008 May 1;336(7651):995–8.

266. Winter RJ, Sheehan Y, Papaluca T, Macdonald GA, Rowland J, Colman A, et al. Consensus recommendations on the management of hepatitis C in Australia's prisons. Med J Aust. 2023;218(5):231–7.

Contact

Dr. Nadine Kronfli
nadine.kronfli@mcgill.ca

Design by Cristal Hall