

Interventions to improve testing, linkage to care and treatment of hepatitis C virus (HCV) among people in prisons: A systematic review

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INTRODUCTION

- More than 11 million people are imprisoned worldwide every year.¹
- ~3-38% of people in prison have been exposed to HCV.²
- Since the population level impact of direct-acting antivirals (DAAs) is dependent on the degree of testing and treatment uptake, identifying evidence-based interventions that enhance testing, linkage to care, and treatment uptake for people in prison is crucial if countries are to reduce the global burden of HCV infection.

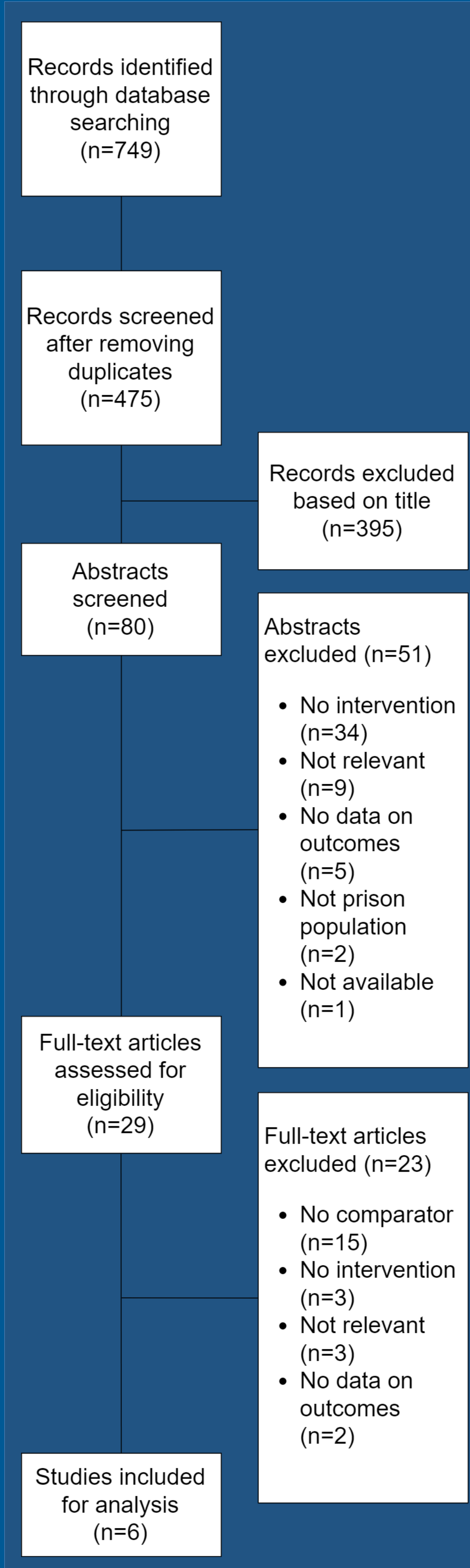
AIM

The aim of this review was to synthesize evidence on the effectiveness of interventions to increase HCV testing, linkage to care, and treatment uptake among people in prison.

METHODS

- We searched Medline (Ovid 1996 – present), Embase (Ovid 1996 – present), and the Cochrane Central Register of Controlled Trials for English language articles published between January 2007 and November 2017.
- Abstracts from selected scientific conferences (International Liver Congress 2016 and American Association for the Study of Liver 2016) were screened for review eligibility.
- Studies evaluating interventions to enhance HCV testing, linkage to care and treatment uptake for people in prison were included.
- Exclusion criteria:
 - Studies that were not peer-reviewed scientific articles
 - Review articles including systematic reviews
 - Non-comparative studies
 - Public health interventions targeting health care providers
- Two independent reviewers (N.K. and B.L.) evaluated articles selected for full-text review; disagreements were resolved by consensus.
- Risk of bias in individual studies was assessed independently by two reviewers (N.K. and B.L.) using the Cochrane Collaboration's risk of bias tool for randomised studies³ and the ROBINS-I tool (Risk Of Bias In Non-randomised Studies - of Interventions)⁴ for non-randomised studies. Disagreements were resolved by consensus.

Figure 1: Study selection process



RESULTS

Table 1: Characteristics and results of included studies of interventions to increase HCV testing

Author (year)	Study Design	Location	Setting	Population	Intervention description	Comparator description	Outcome description	Outcome in intervention arm	Outcome in comparator arm
On-site HCV testing with education and counselling									
Winter (2017) ⁵	Two-arm, (pre-post) controlled	Australia	3 adult prisons (2 male, 1 female)	100% prisoners; 67% male	Opt-in blood-borne virus and sexually transmitted infection (BBV/STI) testing through a once-weekly clinic operated by specialist public health nurses	Standard of care	HCV testing uptake	25.4% tested	13.0% tested
Combination birth-cohort and risk-based testing									
Stockman (2016) ⁶	Single arm	USA	2 adult state prisons (1 male, 1 female)	100% prisoners; 85% male	Risk-based HCV testing with universal testing for 1945-1965 cohort	Risk-based HCV testing. (Any one of: history of injection drug use; elevated liver enzymes; anti-HCV Ab+; HIV+; or history of liver disease)	HCV testing uptake	36.9% tested	28.3% tested
Dried blood spot (DBS) testing									
Craine (2015) ⁷	Step-wedged RCT	United Kingdom	5 prisons (4 male, 1 female)	100% prisoners	Opt-in DBS testing	Standard of care: on-demand venipuncture	HCV testing uptake	No arm-specific outcome information provided.	
Hickman (2008) ⁸	Cluster RCT	United Kingdom	14 sites (3 prisons; 11 drug specialty clinics)	100% male	Opt-in DBS testing	Standard of care: on-demand venipuncture	HCV testing uptake	348 tested (all participants)	122 tested (all participants)
McLeod (2014) ⁹	Two-arm, (pre-post) controlled	United Kingdom	Multiple settings including prison	No demographic information provided	A package of prison-based interventions: improved accessibility of HCV testing, targeted activities to promote HCV testing, and DBS testing	Standard of care: on-demand venipuncture	HCV testing uptake	429 tested (all participants)	257 tested (all participants)

Table 2: Characteristics and results of included studies of interventions to increase linkage to HCV care

Author (year)	Study Design	Location	Setting	Population	Intervention description	Comparator description	Outcome description	Outcome in intervention arm	Outcome in comparator arm
Facilitated referral and scheduling of appointment with specialist									
Tait (2010) ¹⁰	Cohort study (pre-post)	United Kingdom	Multiple settings including prison	No prison-specific demographic information provided	Non-medical and outreach nurse-led facilitated referral to hepatitis specialist	Medical-led referral only (usual care)	Hepatitis specialist appointment attendance	75 inmates linked to care	4 inmates linked to care

Table 3: Risk of bias assessment of included studies

A. Risk of bias assessment for included randomised studies using the Cochrane Collaboration's risk of bias tool³

Author (year)	HCV testing							Number of domains of high risk of bias
	Selection bias (random sequence)	Selection bias (allocation concealment)	Performance bias	Detection bias	Attrition bias	Reporting bias	Other bias	
Craine (2015)	Unclear	Low	High	Unclear	High	Low	Unclear	2
Hickman (2008)	Low	High	High	Unclear	High	Unclear	High	4

B. Risk of bias assessment for included non-randomised studies using the ROBINS-I assessment tool⁴

Author (year)	HCV testing							Risk of bias judgement
	Bias due to confounding	Bias in selection of participants into the study	Bias in classification of interventions	Bias due to deviations from intended interventions	Bias due to missing data	Bias in measurement of outcomes	Bias in selection of the reported result	
Stockman (2016)	Moderate	Low	Low	Low	Low	Low	Moderate	Moderate
McLeod (2014)	Serious	Moderate	Moderate	Serious	Moderate	Moderate	Moderate	Serious
Winter (2016)	Moderate	Moderate	Low	Low	Moderate	Low	Moderate	Moderate
Linkage to care								
Tait (2010)	Critical	Moderate	Moderate	Serious	Moderate	Moderate	Moderate	Critical

CONCLUSIONS

- To achieve the WHO hepatitis elimination targets by 2030, high proportions of people with chronic HCV infection need to be diagnosed and successfully treated.
- This review highlights the dearth of studies focused on enhancing engagement along the HCV care cascade for people in prison.
- With the introduction of DAAs, rigorous controlled studies evaluating interventions to improve testing, linkage and treatment uptake for people in prison are necessary to eliminate HCV.

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