Interventions to reduce sexually transmitted infections and blood-borne viruses in incarcerated adult populations: a systematic review

Amanda Nichole Balmer, Leah East, Annette Brömdal, Amy Mullens, Sonya Osborne and Kathryn Kynoch

Abstract

Purpose – *Sexually transmitted infections (STIs) and blood-borne viruses (BBVs) present a global health challenge as rates continue to rise among incarcerated adults. This paper aims to identify existing interventions used to reduce STIs and BBVs in incarcerated adult populations.*

Design/methodology/approach – *This review followed JBI methodology and considered studies from any adult incarceration facility in any language. Any intervention for reducing STIs and/or BBVs transmission was included. Databases searched included PubMed, CINAHL (EBSCO), Ovid Platform, PsycINFO (EBSCO), Cochrane CENTRAL and Scopus. Two independent reviewers screened titles, abstracts and full texts. The JBI standardized critical appraisal instruments were used to consider methodological quality. Findings are presented in narrative format.*

Findings – *Twenty-two studies were included in the review. Studies were conducted across a wide range of countries. While multiple distinct interventions and programs were used, many of the studies reported reductions in the number of STIs and/or BBVs. Overall, there is some evidence to support the introduction of targeted programs in correctional settings to reduce the number of STIs/BBVs. Further research on this topic using higher quality study designs is needed.*

Originality/value – *To the best of the authors' knowledge, this systematic review summarizes and presents the most recent research on any type of quantitative design or intervention to reduce STIs and/or BBVs in incarcerated adults, including studies conducted in all geographical locations.*

Keywords *Correctional health care, Health in prison, Infectious disease, Prison, Prisoners, Sexual health*

Paper type *Literature review*

(Information about the authors can be found at the end of this article.)

Received 11 August 2024
Revised 25 March 2025
21 May 2025
Accepted 1 June 2025

Funding: A.B. has been awarded a University of Southern Queensland Research Training Program Stipend Scholarship; however, no specific funding has been received for the conduct of this review.

Introduction

Globally, the prevention and management of sexually transmitted infections (STIs) and blood-borne viruses (BBVs) are important health care issues that need to be addressed urgently. There are over 30 different types of STIs that involve parasites, viruses and/or bacteria. STIs can be transmitted through sexual contact (including oral, vaginal and/or anal routes), through vertical transmission in childbirth, and/or through contact with blood or blood products, with the latter referring to BBVs (Mayo Foundation for Medical Education and Research, 2021). Many STIs and BBVs are asymptomatic, which means that people infected with STIs/BBVs remain untreated and could unknowingly transmit the infection to another person [World Health Organization (WHO), 2022]. This can result in serious health implications and the development of comorbidities such as pelvic inflammatory disease, urethritis and cervicitis as well as onward transmission (Buder *et al.*, 2019; Dietz *et al.*, 2018).

Harboring an active STI has also been found to increase the risk of acquiring human immunodeficiency virus (HIV) (Boskey, 2021). Some of the more common STIs, if detected, such as syphilis, chlamydia and gonorrhea can be treated with antibiotics (Liblik *et al.*, 2023). In addition, in recent years, researchers have noted new strains of antibiotic-resistant STIs have resulted in different treatment modalities being required (Buder *et al.*, 2019).

Globally, there are roughly 376 million newly diagnosed incidences of chlamydia, gonorrhea, syphilis and trichomoniasis each year, that is in excess of 1 million STIs diagnosed each day (WHO, 2019). While any sexually active individual is at risk of acquiring an STI, it is known that women and transgender and gender-diverse people are at heightened risk (Sinka, 2024). Furthermore, the WHO identified five key populations requiring public health action to address STIs, HIV and viral hepatitis (WHO, 2023). These key populations include sex workers, men who have sex with men (MSM), trans people, intravenous drug use (IVDU) and other LGBT groups (WHO, 2023).

STI treatment costs place substantial socioeconomic pressure on the global public health sector (Carmona-Gutierrez *et al.*, 2016). In developing countries, ill health due to STIs accounts for 17% of economic losses (Gul *et al.*, 2022). Chen *et al.* (2023) reported that the worldwide prevalence of syphilis was in excess of 49 million in 2019, which represented a 60% increase since 1990. In addition, Tsuboi et al. (2021) reported in their systematic review that between 2000 and 2020, approximately 7.5% of men who have sex with men had syphilis, raising concern for this population group.

The prevalence of STIs such as HIV, hepatitis C (HCV) and hepatitis B (HBV) are higher in prisons than in the general community (Dolan *et al.*, 2016). This is attributed to greater frequency of high-risk behaviors that are undertaken within the correctional environment such as, unprotected sexual practices, intravenous drug use IVDU, piercing, sharing razors and tattooing in nonsterile conditions without optimal infection control (WHO, 2014; Moazen *et al.*, 2019).

Of the 10.2 million people incarcerated globally in 2014, STIs such as HIV, HCV and chronic HBV represented 3.8%, 15.1% and 4.8%, respectively (Dolan *et al.*, 2016). In addition, there is limited access to health services such as STI testing and treatment within carceral settings (WHO, 2019). The WHO's STI, HIV and hepatitis strategies (WHO, 2016, 2022) have brought worldwide attention to the importance of providing equitable access to STI and BBV health services for incarcerated populations. These global strategies focus on curable STIs with the aim of a 90% reduction by 2030; however, reducing the number of STIs in incarcerated settings remains an ongoing battle (WHO, 2016; WHO, 2022). The WHO recommends health prevention interventions such as HBV vaccination, condom distribution, harm reduction interventions such as needle and syringe exchange, vertical transmission prevention for HBV, HIV and syphilis, and pre-exposure prophylaxis (PrEP) for HIV and post-exposure prophylaxis (PEP) for STIs and HIV as essential actions for people within custodial settings (WHO, 2023). Given the transient nature of this cohort of people, as the majority will return to living in the general community at some stage (Kinner and Young, 2018; Centers for Disease Control and Prevention, 2021), there is a need for interventions such as screening and surveillance to be implemented at a global level.

Multiple interventions have been explored to minimize the spread of STIs (Lazenby *et al.*, 2023; LaMontagne *et al.*, 2004; Kelly *et al.*, 2020; Delaney *et al.*, 2023). Interventions including screening (LaMontagne *et al.*, 2004) and surveillance (Lazenby *et al.*, 2023) of STIs can make significant contributions to the control of STIs by identifying the prevalence and using this information to monitor the levels of STI burden—thus informing the appropriate level of action required. For example a health promotion intervention investigated by Kelly and colleagues reduced the number of STIs in carceral settings by improving nursing competence which resulted in earlier detection and earlier treatment of STIs (Kelly *et al.*, 2020). Other interventions that have been investigated in the literature

include motivational interviewing which was found to minimize the spread of STIs through encouraging a reduction in risky sexual health behaviors (Delaney *et al.*, 2023). The Centers for Disease Control and Prevention (2021) supports the need for interventions such as STI screening and treatment services for persons in correctional facilities. The need for STI screening and treatment interventions in corrections is shared by the WHO whom have identified that screening and treatment of STIs in marginalized populations such as those residing in correctional environments as weak, further recommending health interventions such as diagnosis and treatment as essential (WHO, 2023).

For the purpose of this systematic review, an initial search of MEDLINE, PROSPERO, JBI Evidence Synthesis and the Cochrane Database of Systematic Reviews was performed to identify existing reviews. While we identified previously published systematic reviews that had investigated interventions focused on reducing the transmission of STIs in carceral settings (Kouyoumdjian *et al.*, 2015; Rumble *et al.*, 2015; Spaulding *et al.*, 2022a), there were a number of limitations identified with these review. These limitations included narrow focus on specific interventions (i.e. BBVs only) and were limited to discrete geographical locations or study designs (i.e. randomized control trials). This systematic review focused on summarizing and presenting recent research on this topic providing a contemporary perspective. We included studies conducted in all geographical locations, using any type of quantitative study design or intervention to reduce STIs and/or BBVs in incarcerated adults.

Methods

This review was conducted in accordance with "JBI methodology for systematic reviews of effectiveness" (Tufanaru *et al.*, 2020) and was conducted in accordance with an *a priori* published protocol (Balmer *et al.*, 2023).

Review question(s)

What interventions are there to reduce STIs and BBVs in incarcerated adult populations?

Inclusion criteria

Participants

This review considered studies that included incarcerated males and females, 17 years and above. This is a deviation from the published protocol which originally stated that male and female incarcerated adults 18 years and older would be included. However, many of the included studies defined adult incarcerated people as 17 years and older. The studies were from any geographical location, in any type of incarceration facility (e.g. jails, prisons, correctional facilities and penitentiaries). Environments such as juvenile detention centers and contexts not focused on incarceration, such as asylum-seeker detention centers, were excluded.

Intervention(s)

This review considered studies that evaluated any intervention for reducing STIs and/or BBVs in incarcerated adult populations. Interventions included programs screening to treat STIs and/or BBVs, STI case management programs, surveillance clinics, new models of care, condom and dental dam provision, pharmaceutical prophylaxis programs (e.g. PrEP), health promotion, and education programs. For the purpose of this review, screening was defined as an organized or systematic screening, facility-wide program or any intervention including testing (Speechley *et al.*, 2017). Surveillance was defined as the collection, analysis and interpretation of information on the health status of a population, in this case incarcerated persons, to provide early warning of disease outbreaks and to monitor disease

burden over time (WHO, 2016). There were no limitations on the type, frequency or mode of delivery of interventions investigated in the studies.

Comparator(s)

This review considered studies that compared one intervention to another intervention or no intervention.

Outcomes

The primary outcome for the review was to identify the number of STIs and/or BBVs. Secondary outcomes of interest included cure rates/treatment rates, re-infection rates as well as uptake and adoption of programs. Uptake rates were measured by the number of incarcerated people who participated in programs. Adoption was measured as per the included studies that reported on this outcome and included satisfaction, user experience or number of facilities that implemented an intervention or program.

Types of studies

This review considered experimental and quasi-experimental designs, including pre- and post-studies, randomized controlled trials (RCTs), non-randomized controlled trials (non-RCTs) and interrupted time-series studies. Analytical observational studies, for example, retrospective studies, prospective cohort studies, case control studies and analytical cross-sectional studies were also considered. We considered descriptive observational study designs, including descriptive cross-sectional studies, case series and individual case reports. In addition, unpublished studies and gray literature were also considered.

Search strategy

Published and unpublished studies were located using a three-step search strategy. First, an initial limited search of PubMed using key terms, accessing all fields was undertaken to identify relevant articles. Second, text words from the title and abstract of relevant articles, including the index terms used to describe the articles, were used to formulate a full search strategy. The search strategy, including all identified keywords and index terms, were then modified for each included information source. Finally, the reference lists of all included studies were then screened for additional articles. The search strategy included studies published in any language and Google Translate™ was used for translation. The search was conducted in May 2025 and included studies published from 2016 until 2025. This timeframe was selected to coincide with the release of the WHO global health strategies (WHO, 2016; WHO, 2022), and due to the significant developments in global STI testing in key populations including incarcerated people since this time (Taylor *et al.*, 2022). The databases searched included CINAHL (EBSCO), PubMed, Ovid platform, PsycINFO (EBSCO), Cochrane CENTRAL and Scopus. Sources of unpublished studies and grey literature included ProQuest Dissertations and Theses Global, and Google Advanced (first 10 pages).

Study selection

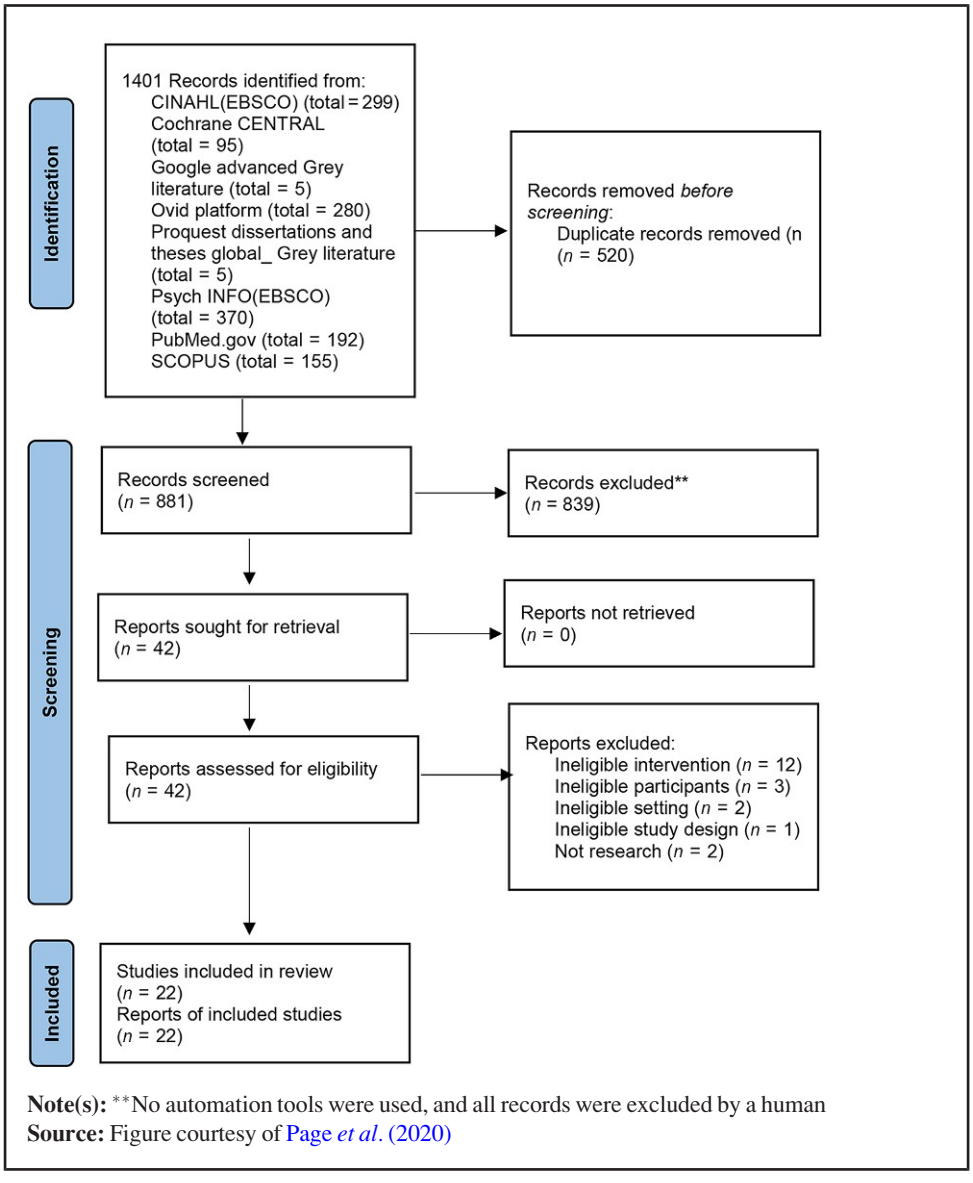
Following the search, all identified citations were uploaded into EndNote X9.3.3 (Clarivate Analytics, PA, USA) (The EndNote Team, 2020) and duplicates were removed. Two independent reviewers (AB, KK) conducted a pilot test to ensure congruency with selection according to the inclusion criteria on titles and abstracts before screening the studies independently. Studies that were considered to have likely relevance were retrieved in full and their citation details were imported into the JBI System for the Unified Management,

Assessment and Review of Information (JBI SUMARI) (Munn *et al.*, 2019). The full text of selected citations was assessed in detail against the inclusion criteria by two independent reviewers (AB, KK). Reasons for exclusion of papers and full-text studies that did not meet the inclusion criteria were recorded and reported in this systematic review (Figure 1). Any disagreements that arose at each stage were resolved through discussion with and, or with a third reviewer.

Assessment of methodological quality

All review team members were involved in the critical appraisal process. Eligible studies were critically appraised by two independent reviewers at study and outcome level for methodological quality using the JBI standardized critical appraisal instruments for experimental, quasi-experimental and observational studies. It was not necessary to

Figure 1 Search results and study selection and inclusion process



Note(s): **No automation tools were used, and all records were excluded by a human
Source: Figure courtesy of Page *et al.* (2020)

contact any authors of papers to request missing or additional data. Any disagreements that arose were resolved through discussion, or with a third reviewer.

Data extraction

Data was extracted from the included studies by two independent reviewers (AB, KK) using the JBI standardized data extraction tool (The Joanna Briggs Institute, 2022). Extracted data included information on the study participants, methods, interventions and outcomes of significance to the review objective. Any disagreements that arose between the reviewers were resolved through discussion, or with a third reviewer.

Data synthesis

Our approach to data synthesis was outlined in *a priori* published protocol (Balmer, *et al.*, 2023). As per our published protocol, we had planned to conduct a meta-analysis; however, due to heterogeneity in populations, interventions and/or outcome measures, studies were unable to be pooled statistically. As meta-analysis was not possible, the findings are synthesized narratively. In addition, certainty of evidence was unable to be ascertained as previously planned due to the lack of heterogeneity among the studies. There were also fewer than 10 studies with a comparison group included in the review; therefore, a funnel plot was not generated aligning with the JBI recommendations (Tufanaru *et al.*, 2020).

Results

Study inclusion

Following the electronic database searches, a total of 1,401 studies were identified. CINAHL (EBSCO) ($n = 299$), Cochrane CENTRAL ($n = 95$), Google advanced grey literature ($n = 5$), Ovid platform ($n = 280$), ProQuest dissertations and theses global-Grey literature ($n = 5$), Psych INFO(EBSCO) ($n = 370$), PubMed.gov ($n = 192$) and SCOPUS ($n = 155$). Following the removal of duplicates ($n = 520$), 881 studies were screened for inclusion.

After title and abstract screening, 42 studies (Bah *et al.*, 2024; Bannan *et al.*, 2016; Kebede *et al.*, 2017, Lelièvre *et al.*, 2020, Farhoodi *et al.*, 2024; Farhoudi *et al.*, 2022; Gallagher-Cohoon, 2018; Ojodu and Galadima, 2023; Defante Ferreto *et al.*, 2021; Khajedaluee *et al.*, 2016; Lobo *et al.*, 2019; Mohtasham-Amiri *et al.*, 2021; Bórquez *et al.*, 2017; Gilbert *et al.*, 2021; Gratrix *et al.*, 2019; Seña *et al.*, 2016; Busschots *et al.*, 2021; Chacowry Pala *et al.*, 2018; Connoley *et al.*, 2020; Correa *et al.*, 2017; Dang *et al.*, 2021; Desai, *et al.*, 2023; Dos Santos Bet *et al.*, 2018; Fuge *et al.*, 2022; Halford *et al.*, 2023; Hajarizadeh *et al.*, 2021; Jiménez-Galán *et al.*, 2019; Leite *et al.*, 2022; Mendizabal *et al.*, 2021; Morey *et al.*, 2019; Nelwan *et al.*, 2016; Qureshi *et al.*, 2018; Reekie *et al.*, 2022; Sharafi *et al.*, 2019; Kelly *et al.*, 2022; Lucas *et al.*, 2020; Perrett and Waite, 2019; Puga *et al.*, 2019; Williams *et al.*, 2018; Werling *et al.*, 2022; Winter *et al.*, 2016; Zonta *et al.*, 2024) were retrieved for full-text review. At this stage, we excluded a further 20 studies that did not meet the inclusion criteria: ineligible intervention ($n = 12$); ineligible participants ($n = 3$); ineligible setting ($n = 2$); ineligible study design ($n = 1$); and not research ($n = 2$). Overall, a total of 22 studies (Bah *et al.*, 2024; Bannan *et al.*, 2016; Chacowry Pala *et al.*, 2018; Correa *et al.*, 2017; Dang *et al.*, 2021, Desai, *et al.*, 2023, Dos Santos Bet *et al.*, 2018; Farhoodi *et al.*, 2024; Fuge *et al.*, 2022; Hajarizadeh *et al.*, 2021, Halford *et al.*, 2023, Jiménez-Galán *et al.*, 2019; Leite *et al.*, 2022; Mendizabal *et al.*, 2021; Morey *et al.*, 2019; Nelwan *et al.*, 2016; Qureshi *et al.*, 2018; Reekie *et al.*, 2022; Sharafi *et al.*, 2019; Werling *et al.*, 2022; Winter *et al.*, 2016; Zonta *et al.*, 2024) were deemed eligible for inclusion. Further reasons for exclusion including full-text studies that did not meet the inclusion criteria and reasons for their exclusion are provided in Figure 1.

Methodological quality

Results of appraisal scores are seen in Tables 1–4. Three studies (Fuge *et al.*, 2022; Chacowry Pala *et al.*, 2018; Leite *et al.*, 2022) met all appraisal criteria. There were 12 cross-sectional studies included in the review (Bah *et al.*, 2024; Chacowry Pala *et al.*, 2018; Correa *et al.*, 2017; Farhoodi *et al.*, 2024; Fuge *et al.*, 2022; Jiménez-Galán *et al.*, 2019; Leite *et al.*, 2022; Mendizabal *et al.*, 2021; Morey *et al.*, 2019; Qureshi *et al.*, 2018; Reekie *et al.*, 2022; Winter *et al.*, 2016) (see Table 1). Six (Correa *et al.*, 2017; Jiménez-Galán *et al.*, 2019; Mendizabal *et al.*, 2021; Morey *et al.*, 2019; Qureshi *et al.*, 2018; Winter *et al.*, 2016) of the criteria were met by all studies (Chacowry Pala *et al.*, 2018; Correa *et al.*, 2017; Fuge *et al.*, 2022; Jiménez-Galán *et al.*, 2019; Leite *et al.*, 2022; Mendizabal *et al.*, 2021; Morey *et al.*, 2019; Qureshi *et al.*, 2018; Reekie *et al.*, 2022; Winter *et al.*, 2016). Only 3 (Chacowry Pala *et al.*, 2018; Fuge *et al.*, 2022; Leite *et al.*, 2022) of the 12 (Bah *et al.*, 2024; Chacowry Pala *et al.*, 2018; Correa *et al.*, 2017; Farhoodi *et al.*, 2024; Fuge *et al.*, 2022; Jiménez-Galán *et al.*, 2019; Leite *et al.*, 2022; Mendizabal *et al.*, 2021; Morey *et al.*, 2019; Qureshi *et al.*, 2018;

Table 1 Critical appraisal of analytical cross-sectional studies

Citation	*Q1*	*Q2*	*Q3*	*Q4*	*Q5*	*Q6*	*Q7*	*Q8*
Bah *et al.* (2024)	Y	Y	Y	Y	U	N	Y	Y
Chacowry Pala *et al.* (2018)	Y	Y	Y	Y	Y	Y	Y	Y
Correa *et al.* (2017)	Y	Y	Y	Y	U	U	Y	Y
Farhoodi *et al.* (2024)	Y	Y	Y	Y	U	N	Y	Y
Fuge *et al.* (2022)	Y	Y	Y	Y	Y	Y	Y	Y
Leite *et al.* (2022)	Y	Y	Y	Y	Y	Y	Y	Y
Reekie *et al.* (2022)	Y	Y	Y	Y	N	N	Y	Y
Mendizabal *et al.* (2021)	Y	Y	Y	Y	U	U	Y	Y
Morey *et al.* (2019)	Y	Y	Y	Y	U	U	Y	Y
Qureshi *et al.* (2018)	Y	Y	Y	Y	U	U	Y	Y
Jimenes-Galan *et al.* (2019)	Y	Y	Y	Y	U	U	Y	Y
Winter *et al.* (2016)	Y	Y	Y	Y	N	N	Y	Y
Total %	100	100	100	100	30	30	100	100

Note(s): Y = yes; N = no; U = unclear. Q1: Were the criteria for inclusion in the sample clearly defined? Q2: Were the study subjects and the setting described in detail? Q3: Was the exposure measured in a valid and reliable way? Q4: Were objective, standard criteria used for measurement of the condition? Q5: Were confounding factors identified? Q6: Were strategies to deal with confounding factors stated? Q7: Were the outcomes measured in a valid and reliable way? Q8: Was appropriate statistical analysis used?
Source(s): Table by authors

Table 2 Critical appraisal of quasi-experimental studies

Citation	*Q1*	*Q2*	*Q3*	*Q4*	*Q5*	*Q6*	*Q7*	*Q8*	*Q9*
Bannan et al. (2016)	Y	U	N	N	Y	Y	Y	Y	Y
Werling et al. (2022)	Y	U	U	U	U	U	Y	Y	Y
Zonta et al. (2024)	Y	Y	Y	N	N	Y	Y	Y	Y
Total %	100	50	50	0	0	50	100	100	100

Note(s): Y = yes; N = no; U = unclear. Q1: Is it clear in the study what is the "cause" and what is the "effect" (i.e. there is no confusion about which variable comes first)? Q2: Were the participants included in any comparisons similar? Q3: Were the participants included in any comparisons receiving similar treatment/care, other than the exposure or intervention of interest? Q4: Was there a control group? Q5: Were there multiple measurements of the outcome both pre and post the intervention/exposure? Q6: Was follow up complete and if not, were differences between groups in terms of their follow up adequately described and analyzed? Q7: Were the outcomes of participants included in any comparisons measured in the same way? Q8: Were outcomes measured in a reliable way? Q9: Was appropriate statistical analysis used?
Source(s): Table by authors

Table 3 Critical appraisal of case control

Citation	*Q1*	*Q2*	*Q3*	*Q4*	*Q5*	*Q6*	*Q7*	*Q8*	*Q9*	*Q10*
Nelwan *et al.* (2016)	Y	U	Y	Y	Y	U	U	Y	Y	Y
Total %	100	0	100	100	100	0	0	100	100	100

Note(s): Y = yes; N = no; U = unclear. Q1: Were the groups comparable other than the presence of disease in cases or the absence of disease in controls? Q2 Were cases and controls matched appropriately? Q3: Were the same criteria used for identification of cases and controls? Q4: Was exposure measured in a standard, valid and reliable way? Q5: Was exposure measured in the same way for cases and controls? Q6: Were confounding factors identified? Q7: Were strategies to deal with confounding factors stated? Q8: Were outcomes assessed in a standard, valid and reliable way for cases and controls? Q9: Was the exposure period of interest long enough to be meaningful? Q10: Was appropriate statistical analysis used?
Source(s): Table by authors

Table 4 Critical appraisal of cohort studies

Citation	*Q1*	*Q2*	*Q3*	*Q4*	*Q5*	*Q6*	*Q7*	*Q8*	*Q9*	*Q10*	*Q11*
Dos Santos Bet *et al.* (2018)	N	U	Y	N	N	U	Y	Y	Y	U	Y
Dang *et al.* (2021)	U	U	Y	N	N	Y	Y	N	N	N	Y
Desai, *et al.* (2023)	Y	Y	Y	Y	N	N	U	Y	U	U	Y
Hajarizadeh *et al.* (2021)	U	U	Y	U	U	U	Y	Y	Y	N	Y
Halford *et al.* (2023)	Y	Y	Y	Y	U	U	U	U	U	U	Y
Sharafi *et al.* (2019)	N	Y	Y	Y	Y	N	Y	N	N	N	Y
Total %	20	50	100	50	16	16	66	50	50	0	100

Note(s): Q1: Were the two groups similar and recruited from the same population? Q2: Were the exposures measured similarly to assign people to both exposed and unexposed groups? Q3: Was the exposure measured in a valid and reliable way? Q4: Were confounding factors identified? Q5: Were strategies to deal with confounding factors stated? Q6: Were the groups/participants free of the outcome at the start of the study (or at the moment of exposure)? Q7: Were the outcomes measured in a valid and reliable way? Q8: Was the follow-up time reported and sufficient to be long enough for outcomes to occur? Q9: Was follow up complete, and if not, were the reasons to loss to follow up described and explored? Q10: Were strategies to address incomplete follow-up used? Q11: Was appropriate statistical analysis used?
Source(s): Table by authors

Reekie *et al.*, 2022; Winter *et al.*, 2016) cross-sectional studies discussed confounding factors, including strategies to manage confounding factors. There were three (Werling *et al.*, 2022; Bannan *et al.*, 2016; Zonta, *et al.*, 2024) quasi-experimental studies included in this review (see Table 2). Overall quality was low, in two studies, which only met four of the criteria (Werling *et al.*, 2022; Bannan *et al.*, 2016). Both studies did not adequately describe comparison groups nor the differences between these groups; however, they used appropriate outcome measures and statistical analyses. The study by Zonta *et al.* (2024) met all but two criteria. The study did not include a control group and did not conduct pre/post measures of the outcomes. One case control study (Nelwan *et al.*, 2016) was included in this review (see Table 3). Exposures and outcomes were measured in a valid and consistent way and the exposure was measured in the same way as the case controls. This study, however, lacked clarity regarding confounding factors, including strategies to manage these resulting in the item being unmet for this criterion.

There were six (Dang *et al.*, 2021; Desai, *et al.*, 2023; Dos Santos Bet *et al.*, 2018; Halford *et al.*, 2023; Hajarizadeh *et al.*, 2021; Sharafi *et al.*, 2019) cohort studies included in this review (see Table 4). From 11 questions, only two were met by all the included cohort studies (Dang *et al.*, 2021; Desai *et al.*, 2023; Dos Santos Bet *et al.*, 2018; Halford *et al.*, 2023; Hajarizadeh *et al.*, 2021; Sharafi *et al.*, 2019. Strengths included the reliable measurement of the intervention, reliable outcome measures and the use of appropriate

statistical analysis. However, many of the cohort studies lacked strategies to address incomplete follow-up as well as inconsistencies in the recruitment process, which resulted in a lack of methodological quality.

Characteristics of included studies

The characteristics of included studies are outlined in Table 5. Included studies were published between 2016 and 2025. The studies included participants from 106 prisons (Bah *et al.*, 2024; Bannan *et al.*, 2016; Chacowry Pala *et al.*, 2018; Correa *et al.*, 2017; Dos Santos Bet *et al.*, 2018; Farhoodi *et al.*, 2024; Halford *et al.*, 2023; Hajarizadeh *et al.*, 2021; Mendizabal *et al.*, 2021; Morey *et al.*, 2019; Nelwan *et al.*, 2016; Werling *et al.*, 2022; Sharafi *et al.*, 2019; Winter *et al.*, 2016), seven correctional facilities (Fuge *et al.*, 2022; Reekie *et al.*, 2022, Zonta et al., 2024), two penitentiaries (Jiménez-Galán *et al.*, 2019; Leite *et al.*, 2022) and three jails (Dang *et al.*, 2021; Desai *et al.*, 2023; Qureshi *et al.*, 2018). One study was conducted in Argentina (Mendizabal *et al.*, 2021), three in Australia (Bah *et al.*, 2024; Hajarizadeh *et al.*, 2021; Winter *et al.*, 2016), four in Brazil (Correa *et al.*, 2017; Dos Santos Bet *et al.*, 2018; Leite *et al.*, 2022; Zonta *et al.*, 2024), one in Canada (Reekie *et al.*, 2022,), one in Ethiopia (Fuge *et al.*, 2022), one in Hungary (Werling *et al.*, 2022), one in Indonesia (Nelwan *et al.*, 2016), two in Iran (Farhoodi *et al.*, 2024; Sharafi *et al.*, 2019), one in Ireland (Bannan *et al.*, 2016), one in Spain (Jiménez-Galán *et al.*, 2019), one in Switzerland (Chacowry Pala *et al.*, 2018), two in the UK (Halford *et al.*, 2023; Morey *et al.*, 2019), and three in the USA (Dang *et al.*, 2021; Desai *et al.*, 2023; Qureshi *et al.*, 2018). Six studies (Correa *et al.*, 2017; Dang *et al.*, 2021; Dos Santos Bet *et al.*, 2018; Hajarizadeh *et al.*, 2021; Leite *et al.*, 2022; Qureshi *et al.*, 2018) reported on the ethnicity of participants. Four studies (Correa *et al.*, 2017; Dang *et al.*, 2021; Dos Santos Bet *et al.*, 2018; Qureshi *et al.*, 2018) reported participants from multiple ethnic backgrounds, one study (Leite *et al.*, 2022) coded participants as either "White" or "non-White" and one study (Hajarizadeh *et al.*, 2021) included Indigenous Australian (Aboriginal and Torres Strait Islander peoples) participants. The age range of participants across the studies ranged from 17 years and above with the highest age reported being 64 years. Of the STIs and BBVs discussed in this review, seven of the studies focused on HCV (Halford *et al.*, 2023; Hajarizadeh *et al.*, 2021; Jiménez-Galán *et al.*, 2019; Mendizabal *et al.*, 2021; Morey *et al.*, 2019; Sharafi *et al.*, 2019; Werling *et al.*, 2022), three on HIV (Bannan *et al.*, 2016; Fuge *et al.*, 2022; Nelwan *et al.*, 2016), two on a combination of chlamydia, gonorrhea, syphilis and HIV (Qureshi *et al.*, 2018; Reekie *et al.*, 2022), one on chlamydia, gonorrhea, HIV, syphilis, HBV and HCV (Winter *et al.*, 2016), two on chlamydia and gonorrhea (Dang *et al.*, 2021; Farhoodi *et al.*, 2024), one on syphilis HIV, HCV and HSV-2 (Chacowry Pala *et al.*, 2018), one on HIV, syphilis, HCV, and HBV (Leite *et al.*, 2022), one on syphilis and HIV (Dos Santos Bet *et al.*, 2018), one on syphilis (Correa *et al.*, 2017), one on HCV, HBV and HIV (Bah *et al.*, 2024), one on syphilis, chlamydia, gonorrhea and HIV (Desai *et al.*, 2023) and the final study investigated 11 STI's (chlamydia, gonorrhea, herpes simplex virus 1 and 2, *Hemophilus ducreyi, Mycoplasma genitalium*, *M. hominis, Treponema pallidum, Trichomonas vaginalis, Ureaplasma parvum* and *U. urealyticum*) as well as HPV (Zonta *et al.*, 2024).

Review findings

Due to the variation in study designs, outcome measures, and intervention characteristics, findings are reported narratively according to the specific outcomes of interest. This review reports on multiple varied interventions for reducing STIs and/or BBVs in correctional environments. Many of the studies utilized some form of pathological testing (such as blood or urine specimens) to determine the presence of STIs and/or BBVs as well as self-reported questionnaires to ascertain risk behaviors. Interventions investigated by the studies included education programs, treatment regimes, telehealth and the introduction of care pathways.

Table 5 Characteristics of included studies

Study	*Study type*	*Country*	*Setting*	*Participant characteristics*	*Intervention description*	*Outcomes of interest*		*Description of main results*	
						Primary outcomes	*Secondary outcomes*	*Primary outcomes*	*Secondary outcomes*
Bah *et al.* (2024)	Cross-sectional study	Australia	*23 Prisons*	*Ethnicity:* Australian and other countries (country of birth) *Age:* > 18 years *Sex:* Male and female	*Screening and surveillance program:* Bio-behavioral survey of BBVs using point-of-care testing for HIV, HBV and HCV	*STI/BBV N:* Reported *Cure rate:* Reported *Reinfection rate:* Reported	*Uptake:* Reported *Adoption:* Reported	*STI/BBV N:* N = 345(BBVs) −318 (HCV) −15 (HBV) −12 (HIV) *Cure rate:* 270 (HCV) Not reported for HBV and HIV *Reinfection rate:* N = 54 (HCV) Not reported for HBV and HIV	*Uptake:* N = 1599 *Adoption:* Associated with the AusHep study
Bannan *et al.* (2016)	Quasi-experimental study	Ireland	*3 Prisons*	*Ethnicity:* Not reported *Age:* ≥ 17 years *Sex:* Males	*Education and screening program:* To conduct short-term HIV point-of-care testing, educate about HIV, overcome stigma and raise HIV awareness	*STI/BBV N:* Reported *Cure rate:* Not reported *Reinfection rate:* Not reported	*Uptake:* Reported *Adoption:* Not reported	*STI/BBV N:* N = 1 (HIV positive) *Cure rate:* Not reported *Reinfection rate:* Not reported	*Uptake:* N = 741 *Adoption:* Not reported
Chacowry Pala *et al.* (2018)	Analytical cross-sectional study	Switzerland	*1 Prison:* (Champ-Dollon largest pre-trial prison in Switzerland)	*Ethnicity:* Not reported *Age:* 18–64 years *Sex:* Males	*Single intervention:* During a Varicella outbreak, exposed incarcerated people were offered additional syphilis, Herpes Simplex Virus 2 (HSV-2), HIV and HCV testing including a questionnaire. HSV-2 testing was offered to the 2011 outbreak cohort only	*STI/BBV N:* Reported *Cure rate:* Not reported *Reinfection rate:* Not reported	*Uptake:* Reported *Adoption:* Not reported	*STI/BBV N:* N = 56 (positive STIs) Syphilis (ELISA+ & TPHA+ & RPR+) (*n* = 3) HSV 2 (ELISA HSV-2+) (*n* = 35) HIV (Ag/Ab combo+ & Inno-Lia+) (*n* = 1) HCV (EIA+ & Inno-Lia+) (*n* = 17) *Cure rate:* Not reported *Reinfection rate:* Not reported	*Uptake:* N = 273 *Adoption:* Not reported

(*continued*)

Table 5

Study	*Study type*	*Country*	*Setting*	*Participant characteristics*	*Intervention description*	*Outcomes of interest*		*Description of main results*	
						Primary outcomes	*Secondary outcomes*	*Primary outcomes*	*Secondary outcomes*
Correa *et al.* (2017)	Analytical cross-sectional study	Brazil	*12 Prisons:* –8 male prisons –4 female prisons	*Ethnicity:* Multiple *Age:* ≥ 18 years *Sex:* Males and females	*Single intervention across multiple sites for the purpose of surveillance:* To establish the prevalence of syphilis across multiple sites	*STI/BBV N:* Reported *Cure rate:* Reported *Reinfection rate:* Not reported	*Uptake:* Reported *Adoption:* Not reported	*STI/BBV N:* N = 92 (active syphilis) *Cure rate:* 0 patients treated *Reinfection rate:* Not reported	*Uptake:* N = 3363 *Adoption:* Not reported
Dang *et al.* (2021)	Cohort study	USA	*1 Jail*	*Ethnicity:* Multiple *Age:* Females ≤ 50 years Males – age not reported *Sex:* Males and females	*Screening and surveillance program:* Pairing opt-out testing for gonorrhea and chlamydia in routine pregnancy tests for women < 50 years, women aged > 50 years were able to request testing. Testing for males was also completed by request	*STI/BBV N:* Reported *Cure rate:* Reported *Reinfection rate:* Not reported	*Uptake:* Reported *Adoption:* Not reported	*STI/BBV N:* N = 234 (positive for gonorrhea/chlamydia) Chlamydia (*n* = 85) Gonorrhoea (*n* = 149) *Cure rate:* 131 (treated) No mention of treatment success *Reinfection rate:* Not reported	*Uptake:* N = 1503 *Adoption:* Not reported
Desai *et al.* (2023)	Cohort study	USA (Dallas)	*1 Jail*	*Ethnicity:* Multiple *Age:* > 17 years *Sex:* Female (cis gender)	*Screening program:* To provide HIV and STI screening for incarcerated women, and to determine PreP eligibility	*STI/BBV N:* Reported *Cure rate:* Not reported *Reinfection rate:* Not reported	*Uptake:* Reported *Adoption:* Not reported	*STI/BBV N:* N = 870(STIs) –75 (syphilis) –462 (chlamydia) –323 (gonorrhea) –10 (HIV) *Cure rate:* Not reported *Reinfection rate:* Not reported	*Uptake:* N = 4398 *Adoption:* Not reported

(*continued*)

Table 5

Study	*Study type*	*Country*	*Setting*	*Participant characteristics*	*Intervention description*	*Outcomes of interest*		*Description of main results*	
						Primary outcomes	*Secondary outcomes*	*Primary outcomes*	*Secondary outcomes*
Dos Santos Bet *et al.* (2018)	Cohort study	Brazil	*12 Prisons:* –8 male prisons –4 female prisons	*Ethnicity:* Multiple *Age:* ≥ 18 years *Sex:* Males and females	*Screening and surveillance program:* To consider the incidence and treatment outcomes of syphilis and HIV using a three-stage program	*STI/BBV N:* Reported *Cure rate:* Reported *Reinfection rate:* Reported	*Uptake:* Reported *Adoption:* Not reported	*STI/BBV N:* N = 120 (positive STIs) Active syphilis VDRL ($n = 95$) HIV evaluated ($n = 25$) *Cure rate:* 38 treated *Reinfection rate:* N = 5 (syphilis) HIV not discussed	*Uptake:* N = 1614 *Adoption:* Not reported
Farhoodi *et al.* (2024)	Cross-sectional study	Iran	*1 Prison*	*Ethnicity:* Not reported *Age:* > 19 – 63years *Sex:* Male	*Education and screening program:* To consider the prevalence and risk factors for STIs by screening patients with active STI symptoms through genital examination and molecular testing. Education was also provided	*STI/BBV N:* Reported *Cure rate:* Not reported *Reinfection rate:* Not reported	*Uptake:* Reported *Adoption:* Not reported	*STI/BBV N:* N = 13 (STIs) *Cure rate:* Not reported *Reinfection rate:* Not reported	*Uptake:* N = 139 *Adoption:* Not reported
Fuge *et al.* (2022)	Analytical cross-sectional study	Ethiopia	*6 Correctional facilities:* Offering anti-viral therapy	*Ethnicity:* Not reported *Age:* ≥ 18 years *Sex:* Males and females	*Surveillance program:* To compare viral suppression and adherence between people living with HIV that are, and are not incarcerated, identifying factors affecting viral suppression and adherence	*STI/BBV N:* Reported *Cure rate:* Not reported *Reinfection rate:* Not reported	*Uptake:* Reported *Adoption:* Not reported	*STI/BBV N:* N = 370 (people living with HIV) *Cure rate:* Not reported *Reinfection rate:* Not reported	*Uptake:* N = 370 *Adoption:* Not reported
Halford *et al.* (2023)	Cohort study	UK	*13 Prisons*	*Ethnicity:* Not reported *Age:* Not reported *Sex:* Male and female	*Education and screening program:* HITT events (delivered once) to patients not tested at reception	*STI/BBV N:* Reported *Cure rate:* Reported *Reinfection rate:* Not reported	*Uptake:* Reported *Adoption:* Reported	*STI/BBV N:* N = 124 *Cure rate:* N = 124 *Reinfection rate:* Not reported	*Uptake:* N = 8139 *Adoption:* Approval for HITT events at multiple centers. Tool kit developed

(*continued*)

Table 5

Study	*Study type*	*Country*	*Setting*	*Participant characteristics*	*Intervention description*	*Outcomes of interest*		*Description of main results*	
						Primary outcomes	*Secondary outcomes*	*Primary outcomes*	*Secondary outcomes*
Hajarizadeh *et al.* (2021)	Cohort study	Australia	*4 Prisons:* −2 × Maximum security prison (Male) −2 × Medium security prisons (1 male and 1 female)	*Ethnicity:* Indigenous Australian ethnicity *Age:* ≥ 18 years *Sex:* Males and females	*Screening and surveillance program:* Patients were tested for HCV. HCV negative patients: 3–6 month follow-up for primary infection. Previously infected HCV patients 3–6 month follow-up for reinfection. Actively infected HCV patients were assessed for treatment	*STI/BBV N:* Reported *Cure rate:* Reported *Reinfection rate:* Reported	*Uptake:* Reported *Adoption:* Not reported	*STI/BBV N:* N = 719 (HCV-RNA+) *Cure rate:* N = 340 (treated) N = 165 (SVR) *Reinfection rate:* N = 25	*Uptake:* N = 3691 *Adoption:* Not reported
Jimenes-Galan *et al.* (2019)	Analytical cross-sectional study	Spain	*1 Large penitentiary*	*Ethnicity:* Not reported *Age:* Age not reported *Sex:* Males	*Screening and surveillance program:* To provide a DAA treatment regime for HCV cases picked up through routine screening on entry to prison, facilitated through telehealth as an alternative to specialist referral	*STI/BBV N:* Reported *Cure rate:* Reported *Reinfection rate:* Reported	*Uptake:* Reported *Adoption:* Reported	*STI/BBV N:* N = 163 (HCV-RNA +) *Cure rate:* N = 131 (treated) N = 131(SVR) *Reinfection rate:* N = 0.	*Uptake:* N = 163 *Adoption:* 67% Patient and doctor satisfaction was very high
Leite *et al.* (2022)	Analytical cross-sectional study	Brazil	*1 Penitentiary*	*Ethnicity:* White and non-white *Age:* ≥ 18 years *Sex:* Males	*Screening program:* To provide rapid HIV, syphilis, HCV and HBV testing on entry to prison	*STI/BBV N:* Reported *Cure rate:* Not reported *Reinfection rate:* Not reported	*Uptake:* Reported *Adoption:* Not reported	*STI/BBV N:* N = 581 (tested positive for one or more STIs – HIV, syphilis, HCV and/or HBV). *Cure rate:* Not reported. *Reinfection rate:* Not reported	*Uptake:* N = 6160 *Adoption:* Not reported
Mendizabal *et al.* (2021)	Analytical cross-sectional study	Argentina	*3 Prisons*	*Ethnicity:* Not reported *Age:* ≥ 18 years *Sex:* Males and females	*Screening program:* Improve linkages to HCV care through dried blood spot testing and medical support to medical staff	*STI/BBV N:* Reported *Cure rate:* Reported *Reinfection rate:* Not reported	*Uptake:* Reported *Adoption:* Not reported	*STI/BBV N:* N = 13 (HCV-RNA+) *Cure rate:* N = 11 (treated). No mention of treatment success. *Reinfection rate:* Not reported	*Uptake:* N = 1141 *Adoption:* Not reported

(*continued*)

Table 5

Study	*Study type*	*Country*	*Setting*	*Participant characteristics*	*Intervention description*	*Outcomes of interest* *Primary outcomes*	*Secondary outcomes*	*Description of main results* *Primary outcomes*	*Secondary outcomes*
Morey *et al.* (2019)	Analytical cross-sectional study	UK	*2 Prisons* −1 × Cat B (Her Majesty's Prison (HMP) Durham) −1 × Cat C (HMP Northumberland)	*Ethnicity:* Not reported *Age:* Age not reported *Sex:* Males	*Screening and surveillance program:* HMP Durham-Universal offering of dry blood spot testing on reception to prison to increase diagnosis; HMP Northumberland- to increase treatment rates for HCV through telehealth clinics	*STI/BBV N:* Reported *Cure rate:* Reported *Reinfection rate:* Not reported	*Uptake:* Reported *Adoption:* Reported	*STI/BBV N:* N = 47 (HCV-RNA+). (HMP Durham) N = 57 (HCV-RNA+) (HMP Northumberland). *Cure rate:* N = 11 completed treatment in HMP Durham but no mention of SVR. N = 29 (SVR) (HMP Northumberland). *Reinfection rate:* Not reported	*Uptake:* N = 1495 *Adoption:* Roll out of program across seven facilities in North East England estate
Nelwan *et al.* (2016)	Case control	Indonesia	*1 Prison* -Narcotics prison	*Ethnicity:* Not reported *Age:* Age not reported *Sex:* Males	*Screening and surveillance program:* To conduct routine HIV screening on new entrants to prison, comparing the costs and yields on routine and targeted testing for people who inject drugs PWID (opt-out and opt-in testing) for all non-PWID	*STI/BBV N:* Reported *Cure rate:* Not reported *Reinfection rate:* Not reported	*Uptake:* Reported *Adoption:* Not reported	*STI/BBV N:* N = 68 (HIV-positive) *Cure rate:* Not reported *Reinfection rate:* Not reported	*Uptake:* N = 888 *Adoption:* Not reported
Qureshi *et al.* (2018)	Analytical cross-sectional study	USA	*1 Jail* -K6G Unit in Los Angeles County Jail	*Ethnicity:* Multiple *Age:* ≥ 18 years *Sex:* Males	*Education and screening program:* To use existing infrastructure for HIV education and screening of MSM. Weekly 15-min education with discussion/QA sessions 25–40 min post followed by offering of opt-out HIV, chlamydia, gonorrhea and syphilis testing	*STI/BBV N:* Reported *Cure rate:* Not reported *Reinfection rate:* Not reported	*Uptake:* Reported *Adoption:* Not reported	*STI/BBV N:* N = 110 (positive STIs). HIV N = 57 Chlamydia *n* = 6 Gonorrhoea *n* = 6 HCV *n* = 8 Syphilis *n* = 33 *Cure rate:* Not reported *Reinfection rate:* Not reported	*Uptake:* N = 671 *Adoption:* Not reported

(*continued*)

Table 5

Study	Study type	Country	Setting	Participant characteristics	Intervention description	Outcomes of interest		Description of main results	
						Primary outcomes	Secondary outcomes	Primary outcomes	Secondary outcomes
Reekie *et al.* (2022)	Analytical cross-sectional study	Canada	*1 Correctional facility:* Short-term maximum-security facility	*Ethnicity:* Not reported *Age:* ≤ 35 years *Sex:* Males and females	*Screening program:* To provide universal opt-out STI testing for chlamydia, gonorrhea, syphilis and HIV on admission for people ≤ 35 years. Opt-in testing was offered during remand periods	*STI/BBV N:* Reported *Cure rate:* Reported *Reinfection rate:* Not reported	*Uptake:* Reported *Adoption:* Not reported	*STI/BBV N:* N = 610 (positive STIs). Chlamydia 271 (16.8%) Gonorrhea 189 (11.7%) Syphilis 150 (7.3%) HIV 1 (0.33%) *Cure rate:* N = 574 (treated). Chlamydia 251 (92.6%) Gonorrhea 177 (93.7%) Syphilis 146 (97.3%) HIV (Linkage to care) 1 (100%) No mention of treatment success. *Reinfection rate:* Not reported	*Uptake:* N = 5285 *Adoption:* Not reported
Sharafi *et al.* (2019)	Cohort study	Iran	*1 Prison:* Central Prison of Karaj	*Ethnicity:* Not reported *Age:* Age not reported *Sex:* Males	*Screening program:* To offer rapid anti-HCV testing (finger stick blood). Adaption of a national pilot on "Screening, diagnosis and treatment of HCV in Iranian prisons" including additional laboratory testing through ELISA	*STI/BBV N:* Reported *Cure rate:* Not reported *Reinfection rate:* Not reported	*Uptake:* Reported *Adoption:* Not reported	*STI/BBV N:* N = 182 (HCV-RNA+) *Cure rate:* Not reported *Reinfection rate:* Not reported	*Uptake:* N = 1788 *Adoption:* Not reported

(*continued*)

Table 5

Study	*Study type*	*Country*	*Setting*	*Participant characteristics*	*Intervention description*	*Outcomes of interest*		*Description of main results*	
						Primary outcomes	*Secondary outcomes*	*Primary outcomes*	*Secondary outcomes*
Werling *et al.* (2022)	Quasi-experimental study	Hungary	*26 Prisons*	*Ethnicity:* Not reported *Age:* 17–64 years *Sex:* Males and females	*Screening and surveillance program:* To offer a voluntary HCV testing and treatment program including DAA treatment (for those that consented to treatment) with hepatology input	*STI/BBV N:* Reported *Cure rate:* Reported *Reinfection rate:* Not reported	*Uptake:* Reported *Adoption:* Reported	*STI/BBV N:* N = 317 (HCV-RNA+) *Cure rate:* N = 220 (treated). N = 212 (SVR). *Reinfection rate:* Not reported	*Uptake:* N = 5779 *Adoption:* Program has been running for > 15 year. Adoption not measured
Winter *et al.* (2016)	Analytical cross-sectional study	Australia	*3 Prisons* Reception prisons	*Ethnicity:* Not reported *Age:* Age not reported *Sex:* Males and females	*Screening and vaccination program:* To offer a nurse-led chlamydia, gonorrhea, HBV, HCV, HIV, syphilis testing, including HBV vaccination intervention delivered during reception to prison	*STI/BBV N:* Not reported *Cure rate:* Not reported *Reinfection rate:* Not reported	*Uptake:* Reported *Adoption:* Not reported	*STI/BBV N:* Not reported *Cure rate:* Not reported *Reinfection rate:* Not reported	*Uptake:* N = 280 *Adoption:* Not reported
Zonta *et al*'s. (2024)	Quasi-experimental study	Brazil	*1 Prison*	*Ethnicity:* Not reported *Age:* > 18 years *Sex:* Female	*Screening program:* To provide STI and HPV testing to incarcerated women through cervical swabs	*STI/BBV N:* Reported *Cure rate:* Not reported *Reinfection rate:* Not reported	*Uptake:* Reported *Adoption:* Not reported	*STI/BBV N:* N = 41 −30 (HPV) −11 (STIs) *Cure rate:* Not reported *Reinfection rate:* Not reported	*Uptake:* N = 299 *Adoption:* Not reported

Source(s): Table by authors

Number of STIs and/or BBVs

Of the studies, 21/22 measured the number of STIs and/or BBVs as an outcome for their intervention. Four study designs were used to report on the number of STIs and/or BBVs. These included 11 cross-sectional (Bah *et al.*, 2024; Chacowry Pala *et al.*, 2018; Correa *et al.*, 2017; Farhoodi *et al.*, 2024; Fuge *et al.*, 2022; Jiménez-Galán *et al.*, 2019; Leite *et al.*, 2022; Mendizabal *et al.*, 2021; Morey *et al.*, 2019; Qureshi *et al.*, 2018; Reekie *et al.*, 2022), six cohort (Dang *et al.*, 2021; Desai *et al.*, 2023; Dos Santos Bet *et al.*, 2018; Halford *et al.*, 2023; Hajarizadeh *et al.*, 2021; Sharafi *et al.*, 2019), three quasi-experimental (Bannan *et al.*, 2016; Werling *et al.*, 2022, Zonta *et al.*, 2024) and one case-control study (Nelwan *et al.*, 2016).

Only two studies (Dang *et al.*, 2021; Hajarizadeh *et al.*, 2021) measured numbers of STIs/BBVs both pre- and post-intervention. One study by Hajarizadeh *et al.* (2021) used a structured HCV screening and surveillance program where participants were tested for HCV, and negative patients were followed up every 3–6 months to determine if they had developed HCV (primary infection). Previously infected HCV patients were followed up every 3–6 months to identify reinfection, and actively infected HCV patients were assessed for treatment. This study reported a post-intervention decrease in HCV rates from 8.31 to 4.31 per 100 persons – years from pre-intervention to post-treatment scale-up period (incidence rate ratio [IRR] 0·52 [95% CI 0·36–0·78]; $p = 0 \cdot 0007$). The study also reported a decrease in primary infection rates of HCV from 6.64 to 2.85 per 100 person-years in the pre- to post-treatment scale up period (IRR 0·43 [95% CI 0·25–0·74]; ($p = 0 \cdot 0019$).

Dang *et al.* (2021) investigated pairing opt-out testing for gonorrhea and chlamydia with the current routinely conducted pregnancy tests for women < 50 years of age. The authors reported an increase in the number of cases of gonorrhea detected in females, from 25/359 (7%) to 62/1171 (5.3%) positive diagnoses. For chlamydia, cases increased from 42/374 (11.2%) pre-intervention to 129/1177 (11%) post-intervention. However, overall, there was no statistically significant difference in the number of gonorrhea ($p = 0.23$) or chlamydia ($p = 0.66$) positive cases as a result of increased testing. Dang *et al.*'s (2021) study included a male comparison group to consider time related trends in testing. These participants were tested by request only and found a decrease in the number of tests with gonorrhea 30/522(5.7%), and chlamydia 45/522 (8.6%) to gonorrhea 20/326 (6.1%), and chlamydia 23/326 (7.1%) to pre- to post-intervention, respectively. Paired testing was not implemented for males, so no significant difference in positivity for gonorrhea (P = 0.82) or chlamydia (P = 0.62) was found.

The 18 remaining studies reported on HIV 11/14 (64.3%), HBV 3/14 (14.3%), HCV 9/14 (50%), HSV 1/14 (7.1%), syphilis 5/14 (28.6%), chlamydia 4/14 (14.3%) and gonorrhea 3/12 (14.3%). Table 6 highlights the number of STIs/BBVs reported in these studies with the majority of studies reporting on HIV, conversely only one study reported on HSV. Overall, these studies found that any interventions that test for STIs/BBVs can be effective in identifying the rate of STIs/BBVs to inform the provision of appropriate treatment (if available), thus reducing and preventing the rate of STI/BBV transmission in incarcerated adults.

Cure rates

The term "cure rates" was not used in any of the studies; this outcome was instead referred to by the authors as the participants having received "treatment" within all the included studies depending on the STI/BBV being investigated. Cure rates/treatment was measured in eleven studies (Bah *et al.*, 2024; Correa *et al.*, 2017; Halford *et al.*, 2023; Mendizabal *et al.*, 2021; Dang *et al.*, 2021; Dos Santos Bet *et al.*, 2018; Hajarizadeh *et al.*, 2021; Jiménez-Galán *et al.*, 2019; Morey *et al.*, 2019; Reekie *et al.*, 2022; Werling *et al.*, 2022). These included six cross-sectional studies (Bah *et al.*, 2024; Correa *et al.*, 2017;

Table 6 Types and numbers and of STI/BBVs

Type of STIs	*Number of studies that reported on the STI type*	*Total numbers reported*
HIV	11 Studies reported on HIV	(Bah *et al.*, 2024; Bannan *et al.*, 2016; Chacowry Pala *et al.*, 2018; Desai *et al.*, 2023; Dos Santos Bet *et al.*, 2018; Fuge *et al.*, 2022; Jiménez-Galán *et al.*, 2019; Leite *et al.*, 2022; Nelwan *et al.*, 2016; Qureshi *et al.*, 2018; Reekie *et al.*, 2022)
HBV	Three studies reported on HBV	(Bah *et al.*, 2024; Leite *et al.*, 2022; Qureshi *et al.*, 2018)
HCV	9 Studies reported on HCV	(Bah *et al.*, 2024; Chacowry Pala *et al.*, 2018; Halford *et al.*, 2023; Jiménez-Galán *et al.*, 2019; Leite *et al.*, 2022; Mendizabal *et al.*, 2021; Morey *et al.*, 2019; Qureshi *et al.*, 2018; Sharafi *et al.*, 2019)
HSV	1 Study reported on HSV	(Chacowry Pala *et al.*, 2018)
Syphilis	5 Studies reported on syphilis	(Correa *et al.*, 2017; Desai *et al.*, 2023; Dos Santos Bet *et al.*, 2018; Leite *et al.*, 2022; Reekie *et al.*, 2022)
Chlamydia	4 Studies reported on Chlamydia	(Desai *et al.*, 2023; Farhoodi *et al.*, 2024; Qureshi *et al.*, 2018; Reekie *et al.*, 2022; Zonta *et al.*, 2024)
Gonorrhea	3 Studies reported on gonorrhea	(Qureshi et al., 2018; Reekie *et al.*, 2022; Zonta et al., 2024)

Note(s): Reference to studies that reported numbers of HIV, HBV, HCV, HSV, syphilis, chlamydia and gonorrhea
Source(s): Table by authors

Mendizabal *et al.*, 2021; Jiménez-Galán *et al.*, 2019; Morey *et al.*, 2019; Reekie *et al.*, 2022), four cohort studies (Dang *et al.*, 2021; Dos Santos Bet *et al.*, 2018; Halford *et al.*, 2023; Hajarizadeh *et al.*, 2021) and one quasi-experimental study (Werling *et al.*, 2022). One study (Dos Santos Bet *et al.*, 2018) reported that the treatment provided was either therapeutically successful or that they had treatment success. Four studies (Hajarizadeh *et al.*, 2021; Morey *et al.*, 2019; Jiménez-Galán *et al.*, 2019; Werling *et al.*, 2022) reported that treatment was provided, further elaborating that sustained virologic response (SVR) had been achieved, which is indicative of treatment success. Three studies (Mendizabal *et al.*, 2021; Dang *et al.*, 2021; Reekie *et al.*, 2022) made mention of the participants being treated, however neglected to mention treatments success, and one study (Correa *et al.*, 2017), a surveillance program, reported that zero patients received treatment as a result of the study.

Dos Santos Bet *et al.* (2018) used a screening and surveillance program to consider the incidence and treatment outcomes of syphilis and HIV using a three-stage program involving subjective and objective questioning, serological testing and a medical chart review of treatment outcomes. STIs/BBVs were successfully treated in 38/1614 cases, with 25/95(26%) syphilis positive cases having successful treatment which was verified through a venereal disease research laboratory (VDRL) test. Of the HIV positive cases, 13/25 (52%) were considered to have been therapeutically successful (defined in the study as therapeutically successful when in the second year the patients viral load was < 200 copies/ml) (Dos Santos Bet *et al.*, 2018).

Hajarizadeh *et al.* (2021) conducted post-treatment follow-up visits at the conclusion of the program and reported a SVR in 165/340 participants treated for HCV. Of the remaining participants, 67/175 had an end of treatment SVR but did not attend post-treatment follow-up. Treatment failure was reported in two patients, and treatment outcomes were unavailable for 106 patients as they either had no post-treatment follow-up test, or follow-up visits. Jimenes-Galan *et al.* (2019) conducted a direct acting anti-viral (DAA) treatment regime for HCV positive patients facilitated through telehealth as an alternative to specialist referral. Of the RNA-HCV positive patients in this study, 131/163 patients that received HCV treatment resulted in a SVR being achieved in 97% of patients. Follow-up DAA treatment was given to patients that were not responsive to the first dose, resulting in zero prevalence by the end of the program.

Another study by Werling *et al.* (2022) used voluntary HCV testing, and a DAA treatment program (for those consenting to treatment) which included hepatology input (monthly hepatologist visits to the jail) where 261/317 (82.3%) had started treatment, 220/317(69.4%) received the full treatment, and 41/317 (12.9%) were still on treatment. The end of treatment timepoint data +24 weeks found a SVR in 212/220 (96.8%). There was no mention of treatment success in four studies (Dang *et al.*, 2021; Mendizabal *et al.*, 2021; Morey *et al.*, 2019; Reekie *et al.*, 2022) that reported on cure rates/treatment. Dang et al. (2021) reported that 131/234 (56%) were treated; however, the researchers made no mention of the treatment success in terms of VDRL testing. Mendizabal et al.'s (2021) study involved a screening program using an Extension for Community Healthcare Outcomes (ECHO) model, which is a telehealth model used for HCV evaluation, improving linkages to HCV care utilizing dried blood spot testing and the provision of medical support to medical staff. This model was described in detail and while the authors discussed SVR, it was not explicitly presented in the results if the 11/13 patients that had undergone treatment had achieved an SVR (Mendizabal *et al.*, 2021).

Morey *et al.* (2019) utilized a screening and surveillance program across two facilities. The first, a Universal Offering of HCV testing program delivered in HMP Durham during reception to prison to optimize HCV testing rates. The second site was in HMP Northumberland where they utilized telehealth clinics to increase treatment rates for HCV (Morey *et al.*, 2019). This study reported that 11/47 (23%) involved in the pilot at HMP Durham completed antiviral therapy but there was no mention of SVR in this facility. In the same study, the pilot conducted in HMP Northumberland reported treatment success post the telehealth clinics intervention with 29/57 (50.9%) participants that commenced treatment having achieved a SVR (Morey *et al.*, 2019). No mention was made of treatment success in Reekie et al.'s (2022) screening program which involved a universal offering of STI testing during admission for people less than or equal to 35 years. However, the authors did provide treatment completion rates for the universal opt-out STI testing program which were (574, 94%, $P = 0.001$). Treatment completion for opt out testing for chlamydia was (92.6%, 251, $P \leq 0.083$), gonorrhea (93.7%, 177,$P \leq 0.123$), syphilis (97.3%, 146, $P \leq 0.044$) and HIV (linkage to care only) (0.3%, 5, $P = n/a$).

A total of zero patients received treatment as a result of Correa et al.'s (2017) program which introduced surveillance as an intervention across multiple sites to establish and monitor the prevalence of syphilis. This study reported that of the patients that had active syphilis (3.8%, 104, $P < 0.001$), 11.5% of patients were aware of their serological status, but were not receiving treatment. The researchers reported this was likely due to the current lack of syphilis treatment available in Brazil.

The study by Bah *et al.* (2024) investigated the need for incarcerated person specific interventions that are prison based to aid in the elimination of BBVs such as HCV, HBV and HIV. The authors reported 67.8% (95% CI:61.7–73.4) of participants in their study were cured. The final study by Halford *et al.* (2023) reported on an HCV-intensive test and treat (HITT) event that targeted incarcerated people that had not been screened at reception. This study reported that treatment was commenced for a total of 79% of positive participants (Halford *et al.*, 2023).

Re-infection rates

Re-infection rates were measured in four studies (Bah *et al.*, 2024; Jiménez-Galán *et al.*, 2019; Hajarizadeh *et al.*, 2021; Dos Santos Bet *et al.*, 2018). Two of these studies (Hajarizadeh *et al.*, 2021; Jiménez-Galán *et al.*, 2019) used similar interventions focusing on HCV DAA treatment programs to monitor reinfection rates. The study by Jimenes-Galan *et al.* (2019) used a DAA treatment regime facilitated through telehealth as an alternative to specialist referral which reported no cases of reinfection. Whereas the study from Hajarizadeh *et al.* (2021) investigated re-infection rates by conducting HCV testing clinic

follow-up and/or treatment based on patient's HCV status. The study reported a total of 25 cases of re-infection with a post-intervention decrease in reinfection rates from 12 to 36 per 100 person-years to 7–27 per 100 person-years (0.59 [0.35–1.00];$p = 0.050$).

Dos Santos Bet *et al.* (2018) explored re-infection rates through a screening and surveillance program to evaluate the incidence and treatment outcomes of syphilis and HIV among Brazilian incarcerated people. This study only discussed reinfection rates in relation to syphilis, reporting that 5 patients continued to have VDRL with titers > 8, which is an indicator of a failed treatment, serofast state, or reinfection. In the study by Bah and colleagues those participants who reported receiving HCV treatment, 20% still had detectable HCV RNA (due to treatment failure or post-treatment reinfection) and required re-treatment (Bah *et al.*, 2024).

Uptake and adoption of programs/interventions

Uptake

Uptake of an intervention was measured in all 22 studies. Of all 22 studies, Leite *et al.* (2022) Werling *et al.* (2022) and Halford *et al.* (2023) reported the highest levels of uptake. Leite *et al.* (2022) had an uptake of 6160 for their intervention which utilized rapid HIV, Syphilis, HCV, and HBV testing during reception to the penitentiary. The authors do not explicitly say that this testing was voluntary; however, they did state that they excluded those who did not perform the rapid screening tests for HIV, syphilis and hepatitis B/C when admitted to the penitentiary. This high level of uptake was followed closely by Werling *et al.* (2022) who had 5,779 incarcerated adults voluntarily take part. Conversely, Jimenes-Galan *et al.* (2019) had one of the lowest levels of uptake with only 163 participants tested for a DAA treatment program using telehealth as an alternative to specialist referral.

In a study by Winter *et al.* (2016), increased uptake of STI and BBV testing was noted. Winter et al.'s (2016) nurse-led STI, BBV testing and HBV vaccination program found an uptake of 280, with an increase in BBV testing participation from 21.1% (16.3–25.8) to 62.1% (56.5–67.8) $p \leq 0.001$. STI testing also increased with chlamydia testing increasing from 4.6% (2.1–7.0) to 16.8% (12.4–21.2) $p \leq 0.001$; gonorrhea testing from 1.4% (0–2.8) to 5.0% (2.4–7.5) $p \leq 0.05$; and syphilis testing from 2.5% (0.7–4.3) to 5.7% (3.0–8.4). BBV Vaccination also increased from 2.1% (0.4–3.8) to 19% (10.2–25.6). Similarly, Dang *et al.* (2021) found a post intervention increase in uptake from 125 (12.7%) to 589 (54.4%) incarcerated females being tested monthly, however, there was minimal change in the small number of male participants (174 (4.3%)–136 (3.5%)) pre to post intervention respectively. The remaining 12 studies are shown in Table 5 which represents the uptake numbers reported in each study. These studies showed that any intervention can be effective in identifying uptake rates, used to inform future researchers when designing new implementations on the studies that have been effective in obtaining high levels of uptake to further reduce STIs and/or BBVs in incarcerated populations.

Adoption

Adoption was measured in three studies (Jiménez-Galán *et al.*, 2019; Morey *et al.*, 2019; Werling *et al.*, 2022). This included two analytical cross-sectional studies (Jiménez-Galán *et al.*, 2019; Morey *et al.*, 2019), and one quasi-experimental study (Werling *et al.*, 2022). Jimenes-Galan et al.'s (2019) intervention considered a DAA treatment regime which was facilitated through telehealth as an alternative to specialist referrals. In this program, adoption was measured through a satisfaction survey for both patients and doctors. The authors reported an overall 67% satisfaction rate. Morey et al.'s (2019) intervention was a pilot that was conducted in two facilities and was rolled out across seven facilities in North-East England, demonstrating a high level of adoption. Another study that demonstrated program continuation across multiple facilities post-intervention was the

study by Werling *et al.* (2022). This study used a voluntary HCV testing and treatment program which included DAA treatment and hepatology input (hepatologists visited the jail monthly to provide consultation). Authors reported that this was a successful program that had been running for more than 15 years across Hungary.

Results summary

Of the studies included in this review 21/22 reported on the number of STIs and/or BBVs as an outcome. Whilst multiple distinct interventions and programs were used across the studies, many of the studies reported reductions in the number of STIs and/or BBVs because of the intervention. Cure rates/treatment were measured/reported in nine studies, and four studies reported cure rate/treatment in terms of treatment success through testing results including VDRL, SVR or viral load < 200 copies/ml.

Reinfection rates were reported in 4/17 studies, with a total of 30 cases of reinfection overall. Uptake of the intervention was reported in all 22 studies. Uptake was measured using a variety of methods such as the number participating in universal testing or the number of people selecting to participate in opt-in/opt-out testing. Three studies reported on adoption via participant satisfaction surveys, and via the number of facilities that implemented the intervention/program post completion of the study.

Discussion

Existing systematic reviews on interventions to reduce the transmission of STIs and BBVs in correctional settings (Spaulding *et al.*, 2022a; Rumble *et al.*, 2015; Kouyoumdjian *et al.*, 2015) have focused on specific types of study designs, interventions and/or have included studies from limited geographical settings. In this systematic review, we considered multiple interventions and varied study designs including observational studies as well as all geographical locations. In the systematic review by Kouyoumdjian *et al.* (2015), only RCTs were included, and the systematic review by Spaulding *et al.* (2022a) only included literature published within the USA. The review by Rumble *et al.* (2015) was focused specifically on interventions relating to BBVs only. This review has demonstrated that there is a large body of literature utilizing other types of research designs from multiple geographical locations which can meaningfully add to the existing literature on this topic (Spaulding *et al.*, 2022a; Rumble *et al.*, 2015; Kouyoumdjian *et al.*, 2015).

STIs and BBVs in incarcerated adult settings remains a salient global issue (WHO, 2024). There were 22 studies included in this review which found that multiple varied interventions have been used to test and treat STIs and BBVs in correctional settings, including: adaptions from previously published programs, rapid blood spot testing programs, paired testing programs and care pathways (Bah *et al.*, 2024; Bannan *et al.*, 2016; Chacowry Pala *et al.*, 2018; Correa *et al.*, 2017; Dang *et al.*, 2021; Desai, *et al.*, 2023; Dos Santos Bet *et al.*, 2018; Farhoodi *et al.*, 2024; Fuge *et al.*, 2022; Hajarizadeh *et al.*, 2021; Halford, *et al.*, 2023; Jiménez-Galán *et al.*, 2019; Leite *et al.*, 2022; Mendizabal *et al.*, 2021; Morey *et al.*, 2019; Nelwan *et al.*, 2016; Qureshi *et al.*, 2018; Reekie *et al.*, 2022; Sharafi *et al.*, 2019; Werling *et al.*, 2022; Winter *et al.*, 2016; Zonta, *et al.*, 2024). However, the two main interventions investigated in several studies included STI/BBV testing for new entrants to prison, and DAA treatment programs. A number of studies (Chacowry Pala *et al.*, 2018; Nelwan *et al.*, 2016; Correa *et al.*, 2017; Jiménez-Galán *et al.*, 2019; Leite *et al.*, 2022; Morey *et al.*, 2019; Qureshi *et al.*, 2018; Reekie *et al.*, 2022; Winter *et al.*, 2016; Dang *et al.*, 2021; Hajarizadeh *et al.*, 2021), used interventions involving testing, detection, treatment, and/or prevention strategies that were delivered for new entrants to prison. These studies found that testing of new entrants led to an increase in STI and/or BBV testing rates, increased detection, increased treatment rates and increased surveillance.

Similar findings were reported in a systematic review by Spaulding *et al.* (2022b) that included 66 studies on the prevalence and management of STIs in correctional settings. Spaulding *et al.* (2022b) recommended screening and treatment be delivered as early as possible. In addition, the need for testing on entry to prison was highlighted by the Centre for Disease Control and Prevention (CDC) (2021) who recommend that screening for communicable diseases in carceral settings be conducted on entry or shortly after intake in short-term facilities leading to earlier diagnosis and treatment.

Findings from three studies (Leite *et al.*, 2022; Morey *et al.*, 2019; Reekie *et al.*, 2022) within this review support the conclusions relating to when testing should be conducted, which supports previous work by Rumble *et al.* (2015). In their review investigating routine testing for BBVs in prisons (which included 44 studies), Rumble and colleagues (2015) concluded that testing should be offered as early as possible during incarceration; with latter opportunities for testing for those that lacked capacity to consent at the time of arrival to the prison. According to Appelbaum and Grisso (1988), for a person to have legal capacity to make medical decisions they must demonstrate four skills:

1. understand the relevant information;
2. appreciate the situation and its consequences;
3. manipulate information rationally, which means the person should be able to logically compare benefits and risks to reach a conclusion; and
4. assess the patients' psycholegal ability.

With known high-risk behaviors such as, IVDU, that are widely prevalent amongst people that reside in correctional environments (WHO, 2014; Moazen *et al.*, 2019), inmates decision-making capacity especially new entrants to prison poses a significant challenge for medical staff in correctional facilities when gaining consent for testing. However, none of the studies included in the current review investigated and reported on capacity to consent. This review brings to light research gaps for future research relating to capacity to consent to testing on entry to prison.

Three studies (Hajarizadeh *et al.*, 2021; Jiménez-Galán *et al.*, 2019; Werling *et al.*, 2022) used a DAA treatment program to reduce STIs and BBVs in incarcerated adult settings. These studies found that interventions utilizing DAA treatment were effective in reducing rates of HCV in carceral settings. The findings from these three studies are similar to other reports within the literature (Bretaña *et al.*, 2020, Mina *et al.*, 2016). Vroling *et al.* (2018) examined models of care and barriers to HCV treatment in prison settings and found that HCV treatment in correctional settings through DAA therapies to be feasible due to cost, and its ability to provide improved patient treatment outcomes. In terms of treatment outcomes, such as cure rates, DAA therapies are widely known to be effective in achieving a sustained viral response (European Association for the Study of the Liver, 2018). However, additional studies are necessary to investigate what makes DAA programs so effective, and, how this can be applied to other STIs/BBVs to further reduce STIs and BBVs in this population.

Limitations

The wide variation in study designs, interventions and reporting made it difficult to aggregate studies and synthesize results for this review. There were also variations within the measures used across studies included in the review. Therefore, the evidence on any effectiveness of interventions to reduce STIs and/or BBVs in incarcerated adult populations cannot be reported with certainty. In addition, this review reported on adult incarcerated populations and did not discriminate according to gender and identity. Therefore, future

research may benefit from reporting on STI/BBV interventions, intervention types and intervention impact according to both gender and gender diverse groups.

Conclusions

This review has reported on interventions to reduce STIs and/or BBVs in incarcerated adult populations. While many of the included studies reported a reduction in the number of STIs and/or BBVs because of the intervention being investigated, there was wide variation in the types of interventions/programs used to prevent and manage STIs/BBVs in these settings. Consequently, the review has highlighted issues with inconsistent reporting and low-level study designs. In addition, there were multiple diverse interventions with varying outcome measures. Overall, there is some evidence to support the introduction of targeted programs in correctional settings to reduce the number of STIs/BBVs. The review results have highlighted that there is limited high quality research on this topic and synthesizing the current evidence was difficult due to the variability in populations, interventions and outcomes. Many of the interventions were designed to identify STIs/BBVs; however, there is less information about the management/cure of these types of diseases. Although these included studies demonstrated pragmatic approaches to reducing STIs and BBVs in incarcerated adult populations, a primary recommendation for future research is the urgent need for further studies to explore this topic in low socioeconomic countries as only one study was found in Africa (Ethiopia) and 1 from Asia (Indonesia). More high-quality research designs such as randomized controlled trials are also needed.

Acknowledgements

The authors would like to acknowledge Metro North Hospital and Health Service for their continued support.

References

Appelbaum, P.S. and Grisso, T. (1988), "Assessing patients' capacities to consent to treatment", *New England Journal of Medicine*, Vol. 319 No. 25, pp. 1635-1638.

Bah, R., Sheehan, Y., Li, X., Dore, G.J., Grebely, J., Lloyd, A.R., Hajarizadeh, B., Lloyd, A., Bah, R. and Li, C. (2024), "Prevalence of blood-borne virus infections and uptake of hepatitis C testing and treatment in Australian prisons: the AusHep study", *The Lancet Regional Health–Western Pacific*, Vol. 53, p. 100974, doi: 10.1016/j.lanwpc.2024.100974.

Balmer, A., Brömdal, A., Mullens, A., Kynoch, K. and Osborne, S. (2023), "Effectiveness of interventions to reduce sexually transmitted infections and blood-borne viruses in incarcerated adult populations: a systematic review protocol", *JBI Evidence Synthesis*, Vol. 21 No. 11, doi: 10.11124.

Bannan, C.L., Lynch, P.A., Conroy, E.P., O'Dea, S., Surah, S., Betts-Symonds, G., Lyons, F.E. and O'Dea, S. (2016), "Point-of-care testing for HIV in an Irish prison setting: results from three major Irish prisons", *International Journal of STD & AIDS*, Vol. 27 No. 11, pp. 950-954.

Bórquez, C., Lobato, I., Gazmuri, P., Hurtado, R., Llanqui, V., Vivanco, M., Reyes, T., Villanueva, H., Salgado, K., Martínez, M.A. and Vega, J. (2017), "Prevalence of HIV, hepatitis B virus and *Treponema pallidum* in inmates in the Preventive Detention Center of Arica, Chile", *Revista Chilena de Infectología*, Vol. 34 No. 5, pp. 453-457.

Boskey, E. (2021), "How does STD infection increase HIV risk?", Verywellhealth, available at: www.verywellhealth.com/how-do-other-stds-increase-hiv-risk-3133098 (accessed 8 October 2021).

Bretaña, N.A., Gray, R.R., Cunningham, E.B., Betz-Stablein, B., Ribeiro, R., Graw, F., Luciani, F. and Lloyd, A.R. (2020), "Combined treatment and prevention strategies for hepatitis C virus elimination in the prisons in New South Wales: a modelling study", *Addiction*, Vol. 115 No. 5, pp. 901-913.

Buder, S., Schöfer, H., Meyer, T., Bremer, V., Kohl, P.K., Skaletz-Rorowski, A. and Brockmeyer, N. (2019), "Bacterial sexually transmitted infections", *JDDG: Journal Der Deutschen Dermatologischen Gesellschaft*, Vol. 17 No. 3, pp. 287-315.

Busschots, D., Kremer, C., Bielen, R., Kocö, M., Heyens, L., Brixko, C., Laukens, P., Orlent, H., Bilaley, P., De Smet, F., Hens, N., Van Vlierberghe, H. and Robaeys, G. (2021), "A multicenter interventional study to assess blood-borne viral infections in Belgian prisons", *BMC Infectious Diseases*, Vol. 21 No. 1, p. 708.

Carmona-Gutierrez, D., Kainz, K. and Madeo, F. (2016), "Sexually transmitted infections: old foes on the rise", *Microbial Cell*, Vol. 3 No. 9, pp. 361-367.

Centers for Disease Control and Prevention (2021), "Sexually transmitted diseases treatment guidelines, 2021", Centers for Disease Control and Prevention, available at: https://www.cdc.gov/std/treatment-guidelines/STI-Guidelines-2021.pdf (accessed 11 November 2021).

Chacowry Pala, K., Baggio, S., Tran, N.T., Girardin, F., Wolff, H. and Gétez, L. (2018), "Blood-borne and sexually transmitted infections: a cross-sectional study in a Swiss prison", *BMC Infectious Diseases*, Vol. 18 No. 1, p. 539.

Chen, T., Wan, B., Wang, M., Lin, S., Wu, Y. and Huang, J. (2023), "Evaluating the global, regional, and national impact of syphilis: results from the global burden of disease study 2019", *Scientific Reports*, Vol. 13 No. 1, p. 11386.

Connoley, D., Francis-Graham, S., Storer, M., Ekeke, N., Smith, C., MacDonald, D. and Rosenberg, W. (2020), "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", *Journal of Viral Hepatitis*, Vol. 27 No. 10, pp. 987-995.

Correa, M.E., Croda, J., Coimbra Motta de Castro, A.R., Maria do Valle Leone de Oliveira, S., Pompilio, M. A., Omizolo de Souza, R., Ferreira de Sá Queiroz, J.H., Esther da Silva, K., Ko, A.I. and Simionatto, S. (2017), "High prevalence of *Treponema pallidum* infection in Brazilian prisoners", *The American Journal of Tropical Medicine and Hygiene*, Vol. 97 No. 4, pp. 1078-1084.

Dang, C.M., Pao, J., Taherzadeh, D. and Nijhawan, A.E. (2021), "Paired testing of sexually transmitted infections with urine pregnancy tests in incarcerated women", *Sexually Transmitted Diseases*, Vol. 48 No. 8S, pp. S20-S25.

Defante Ferreto, L.E., Guedes, S., Braz Pauli, F., Soligo Rovani, S., Anícaovilla Follador, F., Paula Vieira, A., Himovski Torres, R., Colares Coelho, H. and Welter Wendt, G. (2021), "Seroprevalence and associated factors of HIV and hepatitis C in Brazilian high-security prisons: a state-wide epidemiological study", *Plos One*, Vol. 16 No. 7, p. e0255173.

Delaney, D.J., Stein, L., Bassett, S.S. and Clarke, J.G. (2023), "Motivational interviewing for family planning and reducing risky sexual behavior among incarcerated men nearing release: a randomized controlled pilot study", *Psychological Services*, Vol. 20 No. 3, pp. 538-547.

Desai, J., Krakower, D., Harris, B.-L., Culp, S. and Nijhawan, A.E. (2023), "HIV/sexually transmitted infection screening and eligibility for HIV preexposure prophylaxis among women incarcerated in an urban county jail", *Sexually Transmitted Diseases*, Vol. 50 No. 10, pp. 675-679, doi: 10.1097/OLQ.0000000000001442.

Dietz, J., Cho, W.C., Hammer, K.D., Zegarra, M. and Lo, T.S. (2018), "Sexually transmitted infections caused by *Mycoplasma genitalium* and *Neisseria gonorrhoeae*: diagnosis and treatment", *Journal of Clinical Outcomes Management*, Vol. 25, pp. 457-464.

Dolan, K., Wirtz, A.L., Moazen, B., Ndeffo-Mbah, M., Galvani, A., Kinner, S.A., Courtney, R., McKee, M., Amon, J.J., Maher, L., Hellard, M., Beyrer, C. and Altice, F.L. (2016), "Global burden of HIV, viral hepatitis, and tuberculosis in prisoners and detainees", *The Lancet*, Vol. 388 No. 10049, pp. 1089-1102.

Dos Santos Bet, G.M., De Almeida de Souza, G.H., Croda, J., Correa, M.E., De Sales, R.O., Da Silva Santos, R.A., Sgarbi, R.V.E., Yassuda, R.T.S., Motta-Castro, A.R.C., Pompilio, M.A. and Simionatto, S. (2018), "Treatment outcomes of Brazilian inmates with *Treponema pallidum* and human immunodeficiency virus infection: a prospective cohort study", *The American Journal of Tropical Medicine and Hygiene*, Vol. 98 No. 6, pp. 1603-1608.

European Association for the Study of the Liver (2018), "EASL recommendations on treatment of hepatitis C 2018. In press",

Farhoudi, B., Shahmohamadi, E., Seyedalinaghi, S., Rostam Afshar, Z., Parmoon, Z., Mirzapour, P., Nadji, S., Golsoorat Pahliviani, F. and Tashakorian, M. (2022), "Prevalence of sexually transmitted infections (STIs) and related factors among female prisoners in Tehran, Iran", *International Journal of Prisoner Health*, Vol. 19 No. 4, doi: 10.1108/IJPH-09-2022-0055.

Farhoodi, B., Shahmohamadi, E., Seyedalinaghi, S., Nadji, S., Pahlaviani, F.G. and Tashakorian, M. (2024), "Prevalence of sexually transmitted infections and associated factors among male prisoners in

Great Tehran Prison by active case finding", *HIV & AIDS Review*, Vol. 23 No. 4, pp. 349-354, doi: 10.1016/j.hivar.2024.04.005.

Fuge, T.G., Tsourtos, G. and Miller, L. (2022), "Development of a digital platform for training corrections workers in managing HIV and hepatitis C in prison populations", *International Journal of Prisoner Health*, Vol. 18 No. 3, pp. 173-184.

Gallagher-Cohoon, E. (2018), "Despite being 'known, highly promiscuous and active': presumed heterosexuality in the USPHS's STD inoculation study, 1946-48", *Canadian Bulletin of Medical History*, Vol. 35 No. 2, pp. 337-356.

Gilbert, L., Goddard-Eckrich, D., Chang, M., Hunt, T., Wu, E., Johnson, K., Richards, S., Goodwin, S., Tibbetts, R., Metsch, L.R. and El-Bassel, N. (2021), "Effectiveness of a culturally tailored HIV and sexually transmitted infection prevention intervention for Black women in community supervision programs: a randomized clinical trial", *JAMA Network Open*, Vol. 4 No. 4, p. e215226.

Gratrix, J., Smyczek, P., Bertholet, L., Lee, M., Pyne, D., Woods, D., Courtney, K. and Ahmed, R. (2019), "A cross-sectional evaluation of opt-in testing for sexually transmitted and blood-borne infections in three Canadian provincial correctional facilities: a missed opportunity for public health?", *International Journal of Prisoner Health*, Vol. 15 No. 3, pp. 273-281.

Gul, S., Anwar, A., Mubarik, M., Shah, U., Fatima, K. and Fatima, G. (2022), "Sexually transmitted infections: knowledge and factors affecting the treatment and practices among reproductive age women", *Pakistan Journal of Medical and Health Sciences*, Vol. 16 No. 4, pp. 316-316.

Halford, R., Christensen, L., Cox, S., Sheehan, J., Brew, I., Gillyon-Powell, M., Threadgold, G., O'Moore, É., Troke, P.J. and Jones, A. (2023), "Chronic hepatitis C elimination prison initiative: HCV-intensive test and treat, a whole prisoner population HCV test-and-treat program in England", *Health Science Reports*, Vol. 6 No. 12, p. e1724, doi: 10.1002/hsr2.1724.

Hajarizadeh, B., Grebely, J., Byrne, M., Marks, P., Amin, J., McManus, H., Butler, T., Cunningham, E.B., Vickerman, P., Martin, N.K., McHutchison, J.G., Brainard, D.M., Treloar, C., Chambers, G.M., Grant, L., McGrath, C., Lloyd, A.R., Dore, G.J., Loveday, S., Tamaddon, M., Obeid, S., Estivill Mercade, G., Martinez, M., Donnelly, R., Bowman, J., Trevethan, L., Lagios, K., Murrell, T., Bath, N., Tawil, V., Stevens, A., Topp, L., Churchill, A., Pinnock, K., Drew, S., Harrod, M., Smith, A., Williams, R., Cooper, B., Somes, K., Burns, C., Kaur, A., Lobo, C., Conroy, K., McCredie, L., Café, C., Anlezark, J., Rawlinson, W., Yeang, M., Wynn, M. and Willenborg, C. (2021), "Evaluation of hepatitis C treatment-as-prevention within Australian prisons (SToP-C): a prospective cohort study", *The Lancet Gastroenterology & Hepatology*, Vol. 6 No. 7, pp. 533-546.

Jiménez-Galán, G., Alia-Alia, C., Vegue-González, M., García-Berriguete, R.M., Fernández-González, F., Fernández-Rodríguez, C., González-Fernández, M., Gutiérrez, M.L., Losa, J.E., Velasco, M., Moreno, L., Hervás, R., Delgado-Iribarren, A. and García-Cervigón, G.P. (2019), "The contribution of telemedicine to hepatitis C elimination in a correctional facility", *Revista Española de Enfermedades Digestivas*, Vol. 111, pp. 550-555.

Kebede, W., Abdissa, A., Seid, Y. and Mekonnen, Z. (2017), "Seroprevalence and risk factors of hepatitis B, hepatitis C, and HIV infections among prisoners in Jimma Town, Southwest Ethiopia", *Asian Pacific Journal of Tropical Disease*, Vol. 7 No. 5, pp. 270-275.

Kelly, C., Templeton, M., Allen, K. and Lohan, M. (2020), "Improving sexual healthcare delivery for men in prison: a nurse-led initiative", *Journal of Clinical Nursing*, Vol. 29 Nos 13-14, pp. 2285-2292.

Kelly, P.J., Driscoll, D., Lipnicky, A., Anderson, S., Glenn, J. and Ramaswamy, M. (2022), "Developing a cancer prevention health education resource: a primer of process and evaluation", *Journal of Cancer Education*, Vol. 37 No. 2, pp. 274-279.

Khajedaluee, M., Babaei, A., Vakili, R., Valizade, N., Homaei Shandiz, F., Alavian, S.M., Seyed Nozadi, M., Jazayeri, S.M. and Hassannia, T. (2016), "Sero-prevalence of bloodborne tumor viruses (HCV, HBV, HTLV-I, and KSHV infections) and related risk factors among prisoners in Razavi Khorasan Province, Iran, in 2008", *Hepatitis Monthly*, Vol. 16 No. 12, p. e31541.

Kinner, S.A. and Young, J.T. (2018), "Understanding and improving the health of people who experience incarceration: an overview and synthesis", *Epidemiologic Reviews*, Vol. 40 No. 1, pp. 4-11.

Kouyoumdjian, F.G., McIsaac, K.E., Liauw, J., Green, S., Karachiwalla, F., Siu, W., Burkholder, K., Binswanger, I., Kiefer, L. and Kinner, S.A. (2015), "A systematic review of randomized controlled trials of interventions to improve the health of persons during imprisonment and in the year after release", *American Journal of Public Health*, Vol. 105 No. 4, pp. e13-e33.

Lamontagne, D.S., Fenton, K., Randall, S., Anderson, S. and Carter, P. (2004), "Establishing the National Chlamydia Screening Programme in England: results from the first full year of screening", *Sexually Transmitted Infections*, Vol. 80 No. 5, pp. 335-341.

Lazenby, G.B., Korte, J.E., Pekar, E., Peterman, T.A. and Cope, A.B. (2023), "Developing sentinel surveillance for chlamydia and gonorrhea using test results from routine screening during pregnancy", *Sexually Transmitted Diseases*, Vol. 50 No. 1, pp. 21-27.

Leite, A., Damasceno, L.M., Conceição, S.C. and Motta, P.F.C. (2022), "Rapid tests for HIV, syphilis, and chronic hepatitis in a prison population in a prison complex in Salvador (BA), Brazil", *Ciência & Saúde Coletiva*, Vol. 27 No. 12, pp. 4467-4474.

Lelièvre, C., Prissette, G., Reuche, A.A., Regnaut, O., De Logivière, X., Decourcelle, M., Jarde, O. and Manaouil, C. (2020), "Detection of sexually transmitted infections at the Amiens prison: state of play from February 2019 to May 2019", *Revue de Médecine Légale*, Vol. 11, pp. 24-32.

Liblik, K., Lam, J., Pham, A., Byun, J., Farina, J.M. and Baranchuk, A. (2023), "Sexually transmitted infections & heart", *Current Problems in Cardiology*, Vol. 48 No. 5, p. 101629.

Lobo, M.P., Penna, L.H.G., Carinhanha, J.I., Vilela, A.B.A., Yarid, S.D. and Santos, C.S. (2019), "Actions to prevent and cope with the STI/AIDS experienced by women in prison", *Revista de Enfermagem*, Vol. 27, p. e40203.

Lucas, K.D., Bick, J. and Mohle-Boetani, J.C. (2020), "California's prisoner protections for family and community health act: implementing a mandated condom access program in state prisons, 2015", *Public Health Reports*, Vol. 135 No. 1_suppl, pp. 50s-56s.

Mayo Foundation for Medical Education and Research (2021), "Sexually transmitted diseases (STDs)-symptoms and causes", Mayo Foundation for Medical Education and Research, available at: www.mayoclinic.org/diseases-conditions/sexually-transmitted-diseases-stds/symptoms-causes/syc-20351240 (accessed 22 February 2023).

Mendizabal, M., Testa, P., Rojas, M., Colaci, C.S., Elías, S., Nicolini, P., Olguín, S., Dunn, C., Ronchi, C., Barreiro, M., Durán, D. and María, F. (2021), "Sexually transmitted infections among incarcerated women in Buenos Aires, Argentina", *Journal of Women's Health*, Vol. 30, pp. 204-208.

Mina, M.M., Herawati, L., Butler, T. and Lloyd, A. (2016), "Hepatitis C in Australian prisons: a national needs assessment ", *International Journal of Prison Health*, Vol. 12 No. 1, pp. 3-16, doi: 10.1108/IJPH-08-2015-0025.

Moazen, B., Dolan, K., Bosworth, R., Owusu, P.N., Wiessner, P., and Stöver, H. (2019), *Availability, Coverage and Barriers towards Condom Provision in Prisons: A Review of the Evidence*, Institut für Suchtforschung (ISFF), Frankfurt University of Applied Sciences, Frankfurt am Main.

Mohtasham-Amiri, Z., Mahmoud Rezvani, S., Ashoori, F., Behboodi, M., Toosi, H. and Jafari-Shakib, R. (2021), "Seroprevalence of hepatitis C virus among prisoners in Lakan Prison, North of Iran: is there still a concern? ", *Archives of Iranian Medicine (AIM)*, Vol. 24 No. 10, pp. 765-770.

Morey, S., Hamoodi, A., Jones, D., Young, T., Thompson, C., Dhuny, J., Buchanan, E., Miller, C., Hewett, M., Valappil, M., Hunter, E. and McPherson, S. (2019), "Increased diagnosis and treatment of hepatitis C in prison by universal offer of testing and use of telemedicine", *Journal of Viral Hepatitis*, Vol. 26 No. 1, pp. 101-108.

Munn, Z., Aromataris, E., Tufanaru, C., Stern, C., Porritt, K., Farrow, J., Lockwood, C., Stephenson, M., Moola, S. and Lizarondo, L. (2019), "The development of software to support multiple systematic review types: The Joanna Briggs Institute System for the Unified Management, Assessment and Review of Information (JBI SUMARI)", *International Journal of Evidence-Based Healthcare*, Vol. 17 No. 1, pp. 36-43.

Nelwan, E.J., Isa, A., Alisjahbana, B., Triani, N., Djamari, I., Djaja, I., Pohan, H.T., Zwanikken, P., Crevel, R.V., Van Der Ven, A., Meheus, A. and Van Crevel, R. (2016), "Routine or targeted HIV screening of Indonesian prisoners", *International Journal of Prisoner Health*, Vol. 12 No. 1, pp. 17-26.

Ojodu, A. and Galadima, M. (2023), "Detection of Hepatitis B virus from inmates in correctional facilities in Niger State", *Covenant Journal of Health and Life Sciences*.

Page, M.J., McKenzie, J.E., Bossuyt, P.M., Boutron, I., Hoffmann, T.C., Mulrow, C.D., Shamseer, L., Tetzlaff, J.M., Akl, E.A. and Brennan, S.E. (2020), "The PRISMA 2020 statement: an updated guideline for reporting systematic reviews", *PLOS Medicine*, Vol. 18 No. 3, p. e1003583.

Perrett, S.E. and Waite, T.D. (2019), "Exploring HIV infection in a UK vulnerable prisoner population in response to newly identified cases", *International Journal of Prisoner Health*, Vol. 15 No. 3, pp. 244-249.

Puga, M.A.M., Bandeira, L.M., Pompilio, M.A., Rezende, G.R., Soares, L.S., De Castro, V.O.L., Tanaka, T.S. O., Cesar, G.A., De Oliveira, S., Teles, S.A., Yassuda, R.T.S., Weis-Torres, S., Basílio, S.F., Croda, J. and Motta-Castro, A.R.C. (2019), "Screening for HBV, HCV, HIV and syphilis infections among bacteriologically confirmed tuberculosis prisoners: an urgent action required", *Plos One*, Vol. 14 No. 8, p. e0221265.

Qureshi, N., Javanbakht, M., Tadesse, M., Malek, M. and Cox, G. (2018), "Risk-based HIV testing at Los Angeles County Men's Central Jail", *Journal of Correctional Health Care*, Vol. 24 No. 3, pp. 309-319.

Reekie, A., Gratrix, J., Smyczek, P., Woods, D., Poshtar, K., Courtney, K. and Ahmed, R. (2022), "A cross-sectional, retrospective evaluation of opt-out sexually transmitted infection screening at admission in a short-term correctional facility in Alberta, Canada", *Journal of Correctional Health Care*, Vol. 28 No. 6, pp. 429-438.

Rumble, C., Pevalin, D.J. and O'Moore, É. (2015), "Routine testing for blood-borne viruses in prisons: a systematic review", *The European Journal of Public Health*, Vol. 25 No. 6, pp. 1078-1088.

Seña, A.C., Willis, S.J., Hilton, A., Anderson, A., Wohl, D.A., Hurt, C.B. and Muir, A.J. (2016), "Efforts at the frontlines: implementing a hepatitis C testing and linkage-to-care program at the local public health level", *Public Health Reports®*, Vol. 131 No. 2_suppl, pp. 57-64.

Sharafi, H., Poustchi, H., Azimian, F., Tamadoni, B., Ramezani, R., Gouya, M.M., Sheikh, M., Hashemi, F., Tashakorian, M., Alasvand, R., Alavian, S.M. and Merat, S. (2019), "Performance of a rapid diagnostic test for screening of hepatitis C in a real-life prison setting", *Journal of Clinical Virology*, Vol. 113, pp. 20-23.

Sinka, K. (2024), "The global burden of sexually transmitted infections", *Clinics in Dermatology*, Vol. 42 No. 2, pp. 110-118.

Spaulding, A.C., Rabeeah, Z., González-Montalvo, M., Akiyama, M.J., Baker, B.J., Bauer, H.M., Gibson, B.R., Nijhawan, A.E., Parvez, F. and Wangu, Z. (2022a), "Prevalence and management of sexually transmitted infections in correctional settings: a systematic review", *Clinical Infectious Diseases*, Vol. 74 No. Supplement_2, pp. S193-S217.

Spaulding, A.C., Rabeeah, Z., González-Montalvo, M.D.M., Akiyama, M.J., Baker, B.J., Bauer, H.M., Gibson, B.R., Nijhawan, A.E., Parvez, F., Wangu, Z., Chan, P.A. and Corrections, R.I.T.O.S.I. (2022b), "Prevalence and management of sexually transmitted infections in correctional settings: a systematic review", *Clinical Infectious Diseases*, Vol. 74 No. Supplement_2, pp. S193-S217.

Speechley, M., Kunnilathu, A., Aluckal, E., Balakrishna, M., Mathew, B. and George, E.K. (2017), "Screening in public health and clinical care: similarities and differences in definitions, types, and aims – a systematic review", *Journal of Clinical and Diagnostic Research*, Vol. 11 No. 6, p. LE01.

Taylor, M.M., Wi, T., Gerbase, A., Thwin, S.S., Gottlieb, S., Babovic, M.T., Low-Beer, D., Alonso, M., Mello, M.B. and Ishikawa, N. (2022), "Assessment of country implementation of the WHO global health sector strategy on sexually transmitted infections (2016–2021)", *Plos One*, Vol. 17 No. 5, p. e0263550.

The EndNote Team (2020), "EndNote X9.3.3 [computer software]", *Clarivate Analytics*.

The Joanna Briggs Institute (2022), *JBI SUMARI [Online]*, Joanna Briggs Institute, Global, available at: https://sumari.jbi.global/ [accessed].

Tsuboi, M., Evans, J., Davies, E.P., Rowley, J., Korenromp, E.L., Clayton, T., Taylor, M.M., Mabey, D. and Chico, R.M. (2021), "Prevalence of syphilis among men who have sex with men: a global systematic review and meta-analysis from 2000–2020", *The Lancet Global Health*, Vol. 9 No. 8, pp. e1110-e1118.

Tufanaru, C.M.Z., Aromataris, E., Campbell, J., and Hopp, L. (2020), "Chapter 3: Systematic reviews of effectiveness", In E. Aromataris and Z. Munn (Eds), *JBI Manual for Evidence Synthesis [Online]*, JBI. available at: https://synthesismanual.jbi.global/ [accessed].

Vroling, H., Oordt-Speets, A.M., Madeddu, G., Babudieri, S., Monarca, R., O'Moore, E., Vonk Noordegraaf-Schouten, M., Wolff, H., Montanari, M. and Hedrich, D. (2018), "A systematic review on models of care effectiveness and barriers to hepatitis C treatment in prison settings in the EU/EEA", *Journal of Viral Hepatitis*, Vol. 25 No. 12, pp. 1406-1422.

Werling, K., Hunyady, B., Makara, M., Nemesi, K., Horváth, G., Schneider, F., Enyedi, J., Müller, Z., Lesch, M., Péterfi, Z., Tóth, T., Gács, J., Fehér, Z., Ujhelyi, E., Molnár, E. and Nagy, A.N. (2022), "Hepatitis C screening and treatment program in Hungarian prisons in the era of direct-acting antiviral agents", *Viruses*, Vol. 14 No. 2, pp. 2349.

Williams, S.P., Myles, R.L., Sperling, C.C. and Carey, D. (2018), "An intervention for reducing the sexual risk of men released from jails", *Journal of Correctional Health Care*, Vol. 24 No. 1, pp. 71-83.

Winter, R.J., White, B., Kinner, S.A., Stoove, M., Guy, R. and Hellard, M.E. (2016), "A nurse-led intervention improved blood-borne virus testing and vaccination in Victorian prisons", *Australian and New Zealand Journal of Public Health*, Vol. 40 No. 6, pp. 592-594.

World Health Organization (WHO) (2014), "Infectious diseases in prison", *Prisons and Health*, p. 73.

World Health Organization (WHO) (2016), "Global health sector strategy on sexually transmitted infections 2016–2021: toward ending STIs [online]", available at: https://iris.who.int/bitstream/handle/10665/246178/WHO-HIV-2016.05-eng.pdf?sequence=1(accessed 22 February 2023).

World Health Organization (WHO) (2019), "Sexually transmitted infections: evidence brief", *World Health Organization*.

World Health Organization (WHO) (2022), *Global Health Sector Strategies on, Respectively, HIV, Viral Hepatitis, and Sexually Transmitted Infections for the Period 2022-2030*, World Health Organization.

World Health Organization (WHO) (2023), *Recommended Package of Interventions for HIV, Viral Hepatitis and STI Prevention, Diagnosis, Treatment and Care for People in Prisons and Other Closed Settings: Policy Brief*, World Health Organization.

World Health Organization (WHO) (2024), "Global HIV, hepatitis and STIs programmes – people in prisons and other closed settings [online]", available at: www.who.int/teams/global-hiv-hepatitis-and-stis-programmes/populations/people-in-prisons (accessed 8 February 2024).

Zonta, M.A., Liljander, A., Roque, K.B., Schillert, A., Kai, M., Dos Santo, F.A., De Freitas, G.P., Soane, M., Cavalar, M. and Janaudis, G. (2024), "Prevalence of sexually transmitted infections and human papillomavirus in cervical samples from incarcerated women in São Paulo, Brazil: a retrospective single-center study", *Frontiers in Public Health*, Vol. 12, p. 1353845, doi: 10.3389/fpubh.2024.1353845.

Further reading

Meurs, J., Van Kessel, R., Ansems, M., de Vries, L. and Nijmeijer, A. (2022), "Pilot study: implementation of an on-site sexually transmitted infection (STI) screening in a prison setting", *Journal of Prison Health*, Vol. 2 No. 1, pp. 38-42.

Mijan, A., Khandaker, R.A., Ahmed, A., Rahman, S.S. and Mohd, H. (2023), "A comparative study on the prevalence of HIV and hepatitis B/C among prison inmates and general population in Bangladesh", *Bangladesh Journal of Medical Science*, Vol. 18 No. 1, pp. 55-58.

Author affiliations

Amanda Nichole Balmer is based at Graduate Research School, School of Nursing and Midwifery, University of Southern Queensland – Toowoomba Campus, Toowoomba, Australia.

Leah East is based at School of Nursing and Midwifery, University of Southern Queensland – Toowoomba Campus, Toowoomba, Australia.

Annette Brömdal is based at School of Education, University of Southern Queensland – Toowoomba Campus, Toowoomba, Australia.

Amy Mullens is based at School of Psychology and Wellbeing, University of Southern Queensland – Toowoomba Campus, Toowoomba, Australia.

Sonya Osborne and Kathryn Kynoch are both based at School of Nursing and Midwifery, University of Southern Queensland – Toowoomba Campus, Toowoomba, Australia.

Corresponding author

Leah East can be contacted at: leah.east@unisq.edu.au