IMPROVING POST-RELEASE CARE ENGAGEMENT FOR PEOPLE LIVING WITH HIV INVOLVED IN THE CRIMINAL JUSTICE SYSTEM: A SYSTEMATIC REVIEW

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ABSTRACT:

Given sub-optimal HIV care outcomes for people living with HIV (PLWH) post-release from incarceration, we systematically searched peerreviewed literature (2010-2021) describing controlled trial interventions aimed at improving Antiretroviral Therapy (ART) adherence and care linkage following release from correctional facilities for PLWH. Of 392 studies, 16 (4%) met the inclusion criteria. All studies were conducted in the United States and involved some form of intensive case management. Trials that scored highest in terms of study quality provided cell phones for engagement, reported sustained viral load suppression as a measurable outcome to infer ART adherence, and measured longitudinal data collected for at least three-to-six months following release. The two trials that demonstrated improved HIV viral load suppression involved Peer Navigators, and incentivized undetectable viral load, respectively. Facilitating support for addictions and addressing other social and structural barriers to achieving optimal health is also of vital importance in bridging care gaps for PLWH.

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KEYWORDS:

HIV – Incarceration – Antiretroviral Therapy - Adherence

RESUMEN

Debido a los resultados suboptimos en los cuidados de las personas que viven con VIH después de su liberación del encarcelamiento, nosotros realizamos una revisión sistemática de la literatura (2010-2021) que describe ensayos control de intervenciones para mejorar la adherencia a la terapia antiretrovirales (TAR) y el vinculo con la atención medica después de la liberación del encarcelamiento de las personas que viven con VIH. De los 392 estudios, 16 (4 %) cumplieron con los criterios de inclusión. Todos los estudios fueron realizados en los Estados Unidos e incluyen alguna forma de cuidados con manejo intensivo. Los ensayos que tenían los puntajes mas altos en términos de calidad proveían teléfonos celulares para la vinculación, reportaban supresión de la carga viral sostenida como medida indirecta de adherencia al TAR, y han medido datos longitudinales por lo menos de tres a seis meses después de la liberación carcelaria. Los dos ensayos que demostraron mejora en la supresión de la carga viral del VIH involucraban a los pares navegadores e incentivaban la carga viral no detectable, respectivamente. Facilitando el soporte para la adicción y el entendimiento de otras barreras sociales y estructurales para alcanzar una salud optima, es de vital importancia para superar las brechas en la atención de las personas que viven con VIH.

INTRODUCTION:

Advances in antiretroviral therapy (ART) and improved access to care have reduced HIV transmission, along with clinical morbidity and mortality, among people living with HIV (PLWH) (1,2). In the early 2000s the life expectancy for PLWH in North America was 36 years; with advances in ART and access to care, PLWH now have a life expectancy into their seventies, which approaches the general population (1). Optimal adherence to ART has shown to reduce HIV transmission by 96% in sero-discordant couples (2). UNAIDS statistics, global observational and ecological data have further demonstrated that increasing access to ART, including for mother-to-child transmission and sero-discordant sexual couples, is associated with decreased AIDS-related morbidity and mortality, as well as a decrease in new HIV diagnoses (2-6).

A basic fundamental expectation of HIV care is to render the virus undetectable. The World Health Organization announced HIV targets known as "90-90-90"; identify 90% of PLWH, initiate 90% of HIV-diagnosed individuals on ART, and achieve viral suppression in 90% of those on ART (7). In Canada, provincial HIV guidelines dictate achieving this goal within 6 months of therapy initiation (8). As a result of access to ART, many HIV scientists speak to the goal of HIV eradication (9,10). For example, The Joint United Nations Programme on HIV/AIDS estimates that we can eliminate the HIV/AIDS epidemic if 73% of PLWH take ART medications and achieve undetectable viral loads (7). However, such a goal is only realizable with ART adherence. Barriers to achieving the "third 90"—long-term viral suppression—include sub-optimal adherence and retention in care (11).

PLWH who experience incarceration are a marginalized population at risk of poorer HIV care engagement. In the last decade, many studies describe a care gap where PLWH who are criminal-justice involved are at risk of losing access to HIV care upon release from corrections (12-23). Literature has shown us the importance of Seek, Test, Treat and Retain initiatives, which are all the more critical for engaging this particular group during the care opportunity presented by admission to correctional facilities (24-28). Yet a study from Texas involving 2115 PLWH reported only 115, or 4%, of PLWH released from prison filled ART prescriptions within 2 weeks, and this percent only rose to 30% by 2 months post-release (15). A systematic review published in 2020 further explored this care gap, investigating discrepancies in HIV care access for criminal justice involved PLWH (29). The review specifically sought to identify barriers to HIV care utilization encountered by incarcerated PLWH in order to inform future intervention strategies. Their findings solidified the importance of social determinants of health, citing barriers to care such as lack of social support, stigma, discrimination, substance use, as well as lack of knowledge about ART. Findings from their review confirmed sub-optimal ART adherence for this population, including lower odds of viral load suppression associated with history of incarceration (29). The authors concluded that "there is an urgent need for reviewing context specific interventions and ensuring standard of HIV care in prisons" (29). A 2019 systematic review further highlights the negative impact of incarceration for continuity of HIV care post-release for PLWH, which was particularly salient for women living with HIV compared to men, pointing to the potential added gendered impacts of incarceration and unique challenges faced by women living with HIV in the post-release period (30). In Canada, for example, research from a national cohort of women living with HIV identified recent incarceration as a primary factor contributing to disengagement and HIV care loss, reporting a care attrition rate of 30% following release (31). A second longitudinal

cohort study from Canada points to recent incarceration as being independently correlated with reduced HIV virologic suppression for women living with HIV post-release (32). In addition to gender, the review from Erickson et al. highlights poorer HIV health outcomes experienced by racialized PLWH, and the importance of the social and structural determinants of health as critical factors particularly relevant to PLWH who are criminal justice involved. A myriad of social and structural factors impact adherence and engagement in care for PLWH, including poverty, unstable housing, and illicit substance use (30). A recent (2020) US national and state level study further reinforces how social and structural determinants of health including education, poverty and unemployment, as well as overlapping facets of oppression such as race and gender, can undermine ART adherence (33).

Research from high-income settings highlights how correctional facilities can provide an important site to engage and re-engage PLWH in HIV care, showing often dramatic improvements in HIV care outcomes for PLWH during incarceration (34-37). In this regard, access and retention in HIV care *during* incarceration may not be the problem in some settings. In fact, several studies have demonstrated that viral load suppression and CD4 counts upon release from jail have been significantly improved compared to upon entry (29,38,39).

There is well established research documenting an HIV care-gap and barriers contributing to care loss and poor ART adherence post-release from incarceration. We know less about which solutions are effective in mediating these challenges. To our knowledge, no review to date has asked this important question. Understanding this, our goal was to explore trialed interventions in order to better understand which interventions are effective for addressing this care-gap. This work is also

timely given the United Nations' new goal of achieving the 90-90-90 HIV targets described above to facilitate ending the HIV epidemic by the year 2030 (7), and in light of the fact that people who are incarcerated have been identified as a key and priority population (40). The objective of this study was to systematically review the literature for interventions aimed at sustaining longitudinal ART adherence and ongoing care linkage for PLWH following release from correctional facilities.

METHODS:

This systematic review used the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, as well as the methodology framework described by Peters et al. (41), which is an enhancement of the original Arksey and O'Malley (42). The study was exempt from Human Ethics Committee review.

Search Strategy:

Search strategies were adapted from earlier reviews published by Erickson et al. (30), which was developed with the assistance of a qualified librarian from the University of British Columbia Research Department. A search of MEDLINE, EMBASE and COCHRANE were conducted using Pubmed and OVID, as well as Google Scholar, was completed in November, 2019. Studies published in peer-reviewed journals within the past decade involving humans were identified. An updated search was completed in June 2020 and then again on November 5, 2020 before submission to publication. An alert was set for newly indexed articles. One recent study was detected on December 6, 2020, and was incorporated into our introduction and discussion (33) but did not meet inclusion criteria for the review itself. The specific search terms and MeSH are available in Table I, outlining details of our search for criminal-justice involved PLWH and ART.

Studies were included if they 1) involved PLWH released from correctional facilities 2) reported ART adherence or HIV care linkage as a measured outcome and 3) described a controlled clinical trial.

One author (Moher) performed the initial screen of titles and abstracts. Identified appropriate citations and abstracts were uploaded and organized into a shared online drive document. Two independent reviewers (Moher and Black) reviewed the full texts to ensure inclusion criteria were met. Conflicts were resolved by discussion. Reference sections of relevant articles were also screened and reviewed. A third author (Erickson) reviewed the process and assisted in refining preliminary search strategy. Co-authors with clinical and academic HIV and prison medicine expertise (Martin and Pick) reviewed the process to ensure no articles were missed. The Joanna Briggs Institute checklist (43) for randomized controlled trials was used to appraise the methodological quality of the included studies. This checklist is a tool used to evaluate the extent to which a study has addressed the possibility of bias in its design, conduct and analysis.

No funding sources were used to support this review. Databases were accessed through affiliation with University of British Columbia (UBC). This project was conducted over a period of 2 years within the structure and support of the Clinician Scholar Program of UBC. Methodology has been reviewed along the way by peer research colleagues and overseen by program supervisors. As the project developed, the research process was presented at UBC Research Department Rounds and received feedback from leading experts.

RESULTS:

The preliminary databased search identified 392 articles. A PRISMA flow diagram (Figure I) outlines results from the subsequent screening. After limiting to humans and publication within the past decade, 187 abstracts were screened. Of these, 19 were advanced to a full-text review, and four additional studies were added based on expert consultation. Of these, five were excluded for not representing a trialed intervention. One was excluded for involving the wrong population. One was excluded for describing a trial that had not yet taken place. In total, 16 studies met the final inclusion criteria. Characteristics of the final 16 included articles describing controlled clinical trials aimed at interventions to improve ART adherence or HIV care engagement upon release from corrections are summarized in Table II. HIV care engagement was measured as an outcome in the studies by various forms such as post release physician, clinic, or phlebotomy encounters. ART adherence was measured by a range of ways, including participant report, pill counts, pharmacy refills, and most commonly by proxy using serial HIV viral load testing. Although multiple databases were searched exhaustively, all 16 studies took place and were funded within the United States.

No concerning disclosures were noted upon careful review of the studies. Most of the trials, particularly the larger trials that spanned multiple institutions, were funded by federal government institutions. For example, the Althoff (16) and Avery (44) trials, taking place in New York and Cleveland respectively, were both separate initiatives under the overarching project called EnhanceLink. EnhanceLink is a large national-level funded project purposed to design, implement and evaluate various methods of improving HIV post-release care linkage. However, this does not preclude bias. Althoff (16) et al. analyzed transitional care, consisting of case management services for retention in care following release. This large New York arm of EnhanceLink ultimately

involved 867 participants after exclusions. Plasma HIV viral load was used to proxy ART adherence and care engagement. The abstract described the intervention as a success, stating that case management is helpful, with 79% of participants linked to care within 1 month following release. However, reading through the results section reveals that 62% of participants were lost to care by month 6. Similarly, Avery (44), described the results of Cleveland's ATLAS (Assess, Test, Link, Achieve Success) case management intervention involving 74 participants, which was also one of the EnhanceLink sites. They assumed that completing HIV bloodwork, even once, equated care linkage. They stated that 82.1% of participants were linked to care post intervention, since they completed bloodwork at least once within 6 months of release, yet only 35.2% of participants had any further bloodwork by month 12. They furthermore did not report the viral load results of the bloodwork.

Another large, multi-centre (Texas and North Carolina) initiative was the imPACT trial (Individuals motivated to participate in adherence, care and treatment), funded by the NIH (National Insitutes of Health), specifically the National Institute of Drug Abuse. Wohl (45) describes this intervention which included motivational interviewing, case management, and cell phone text reminders. This trial did evaluate plasma viral load as the measured outcome for ART adherence, but did not demonstrate statistical difference between treatment and standard care arms. Three of the 16 included studies were in fact derived from this large intervention, each looking at different population subsets, treatment arm specifics, or outcomes (Wohl (45), Whol (46), and DiPrete (18)). None of the articles or their corresponding analyses revealed statistical difference. Although we determined that the three articles did have significant heterogeneity between treatment and control arms, receiving some of the highest quality metric scores of 12, 11, and 11

respectively (out of a total of 13 using the Joanna Briggs Institute checklist (43), it is important to note that the control arm did in fact receive cell phones and text reminders to stay connected with the study leads for ongoing bloodwork upon release.

Bias was appraised using the Joanna Briggs Institute checklist for RCTs, with overall study quality scores summarized in Table III (43). All trials with quality scoring of 8/13 or higher used serial plasma viral load as a proxy for ART adherence, with longitudinal data being collected for at least three-six months following release. Cell phones with pre-programmed text reminders were provided within the intervention arms of all nine trials with quality scoring of 10/13 or higher. The trials with the largest sample sizes all received National (United States) level funding.

Plasma viral load suppression is the most widely used approximation for ART adherence. Although nine trials reported some form of improvement in ART adherence, such as post-release clinic or phlebotomy encounters or participant self-report, of all 16 trials only two demonstrated an improvement in viral load suppression (47,48). The most recent trial by Toegel (48), which describes an incentivization based intervention involving 102 participants in Baltimore at the John Hopkins University School of Medicine, improved viral load suppression. 62% of their participants had prior history of incarceration. Individuals with detectable viral loads were offered 10$ for each subsequent undetectable viral load that might be achieved or sustained. Participants were followed for one year. There was a 28% improvement in intervention arm compared to control, and there was no difference in this effect when comparison was analysed between the previously incarcerated vs. never incarcerated participants. The second of the two trials that were ultimately successful in improving viral load suppression was the LINK LA trial, described by

Cunningham et al. (47), which took place in Los Angeles and involved 356 participants. This trial tested peer navigation, where people with lived experience of both HIV and criminal justice involvement engaged treatment arm participants while in corrections and upon release. A 13.6% improvement in ART adherence as evidenced by sustained viral load suppression was shown in the intervention group (47). Although peer involvement has been shown to be effective in similar populations, only one other trial, in addition to the LINK LA trial, employed peers as part of their intervention. Myers 2018 (49) describes another longitudinal RCT involving 252 participants from 2010-2013. Peer navigation and intensive case management improved access to community care within the first month upon release from 28% to 44%. However, no significant differences in viral load suppression were reported between the control and intervention groups.

The intervention described in Toegel (48) trial was initiated upon release from corrections. Wimberly (50), describing a yoga-based intervention which was ultimately not successful at improving viral loads, was the only other trial that began after release. Apart from these two, all other 14 trials had interventions that were initiated within the correctional facilities prior to release. Although interventions were not successful in improving viral load suppression in any other trial apart from the Cunningham (47) and Toegel (48) studies, three other trials that we feel deserve further mention are the Springer (51), Spaulding (37), and Beckwith (52) trials. Springer (51) describes an RCT involving 94 PLWH with opioid use disorder. This study was part of a parent trial examining the effect of directly observed administration of ART (DOAART) on viral suppression. Although DOAART did not show effect on HIV viral load suppression, retention on opioid agonist therapy buprenorphine/naloxone was highly associated (AOR 5.37) with sustained HIV viral load suppression (51). Spaulding (37) describes the results of SUCCESS (Sustained

Unbroken Connection to Care Entry Services and Suppression), an intensive case management intervention involving 99 PLWH after exclusions. In the control group, 52% were linked to care upon release as evidenced by at least two lab collections three or more months apart, compared to 40% in the control arm. Viral load also improved, but not statistically different from the control arm. Beckwith (52) describes an RCT in Washington DC that focused on gender differences, and also evaluated plasma viral loads. Although viral loads did not improve, this trial is of note to us as being the only trial that reported on gender differences, highlighting gender discrepancies in HIV outcomes for cisgender woman.

DISCUSSION: In summary, our review identified 16 controlled clinical trials within the past decade that have investigated interventions aimed at improving ART adherence or community care engagement for PLWH leaving prison settings. All trials involved intensive case management. The highest quality scoring trials provided cell phones for longitudinal engagement, reported sustained viral load suppression as a measurable outcome to proxy evaluate ART adherence, and measured longitudinal data collected for at least three-to-six months following release (16,21,34-36,38,41,43,44). Nine trials reported some form of successful improvement in adherence or care engagement using various measured proxy outcomes such as post-release clinic visits, phlebotomy encounters, or participant self-report of their medication adherence. However, although the most common way to proxy assess ART adherence is by measuring HIV viral load suppression; only two of those nine successful trials actually improved this outcome (47,48).

Given viral load suppression is the most common inference of ART adherence (53) assuming adherence using a surrogate of self-report (54), physician engagement (55), or even pill counts (56) and pharmacy refills (57) may not provide accurate data. Achieving sustained viral load

suppression is fundamentally what underscores improved clinical outcomes and HIV prevention (54,58). The two interventions demonstrated to supress viral load were Cunningham (47), which employed Peers as participant navigators, and Toegel (48), which incentivized undetectable viral loads. The overarching purpose of this systematic review is to highlight interventions that have led to improved ART adherence and care engagement in PLWH upon release from corrections, aiming to address the known HIV care-gap, and thereby inform local action initiatives. Studies from this review indicate that interventions involving Peers to help navigate participants throughout their criminal justice trajectory, as well as financially incentivizing the achievement of viral load suppression, have shown success.

Among studies that did not meet the criteria for this review, the use of Peers (people with lived experience of incarceration) as navigators had positive impacts with regards to linking people to care following release from corrections (59-61). Several studies highlight important contributions of Peers navigators in improving HIV care outcomes for PLWH more generally (62-64), including improving care linkages and maintaining viral load suppression after discharge from hospital (62). Specific to the aim of our review, the San Francisco Navigator Project describes Peers employed to help transition PLWH back into community after incarceration. Of note, this 5-year, randomized controlled trial that tested the effectiveness of a patient navigator enhanced case management intervention for HIV-infected individuals leaving the San Francisco County jail system had not yet been reported in the literature at the time of this review (65). A discussion paper referencing this trial suggests that Peer navigation programs, particularly during the first two months after release from correctional facilities, helps to improve care retention and prevent HIV transmission (66). Given the apparent success of involving Peers in interventions aimed at supporting health

outcomes for PLWH, it is interesting that only two trials in this review employed Peer navigators. One of the two trials was the LINK LA trial, which engaged Peers with lived experience of HIV and criminal justice involvement as navigators along the trajectory from corrections to community, significantly improved HIV plasma viral load suppression (47). The other trial involving Peers also showed success in terms of a community care visit within one month following release, but no improvement in sustained virologic suppression (66).

The only other trial that succeeded in improving viral load suppression used financial incentivization to promote ART adherence (48). Incentivization to promote health behaviours, specifically in the field of addictions, has been well documented as a successful strategy, for instance, to encourage smoking cessation (67-70). Specific to HIV, the parent study of the Toegel et al. analysis was an RCT that demonstrated the success of using financial incentives for viral HIV suppression in general (71). Again, the Baltimore trial described in Toegel (48) involving 102 participants whom were rewarded if viral load suppression was achieved, was one of only two successful trials outlined in this review. It is important to highlight another critical characteristic of the participants in the Baltimore incentivization trial, which is that their study design exclusively involved individuals who had detectable viral loads. This arguably represents a subset of PLWH who are at most risk of loss to care upon release from corrections. Within an already marginalized group of criminal-justice involved PLWH, this may represent a subset within that disadvantaged population that are at highest risk for HIV morbidity as well as transmission risk, and therefore in the highest need for successful intervention ideas to manifest. An intervention as simple as incentivizing the achievement of viral load suppression in this group is of great importance for providers striving to maintain care linkage in this severely marginalized and disadvantaged

population. In contrast, the imPACT trial (45), which, though large in scope and spanning multiple states, elected to exclude participants with detectable viral loads. This decision may have risked excluding the very population we are seeking to engage and support.

HIV as a medical condition and corresponding adverse health outcomes do not exist alone as isolated variables. For example, importance of co-occurring substance use disorders is iterated by the Springer trial (51). Although their specific intervention trialing Directly Observed Administration of ART was not successful at improving viral load suppression, they did however notice that there was a statistically significant correlation between PLWH who maintained opioid agonist therapy and sustained viral load suppression. In other words, if substance use is stabilized, PLWH have a greater chance of adhering to ART.

Irrespective of HIV, people involved in the criminal justice system often experience a lack of social and structural supports post-release from incarceration, including barriers to safe and accessible housing, and substance use treatment options, as well as experiencing ongoing trauma, and social stigmatization. Often, even the most tangible elements such as having a cellphone plan, a piece of identification, a bank account or an active medical insurance plan, pose significant and immediate challenges post-release; these facets must be acknowledged for any meaningful intervention to have a chance of success. The immense challenges following release from incarceration is possibly why something as simple as providing 10$ for a viral load that has gone from detectable to suppressed has been shown to be successful (48). Indicators of poor health post-release cannot stand alone and are inevitably intertwined with a lack of social supports post-release that would otherwise help support optimal health.

Furthermore, despite evidence demonstrating that women experience greater challenges achieving optimal HIV health outcomes compared to men (33), including among women living HIV post-release from incarceration (30), only one study reported on gender differences (52). Post-incarceration, women living with HIV report higher needs for social and structural supports compared to their male counterparts (72), and yet research that evaluates gender-specific interventions remains lacking. Interventions that take gender into consideration are needed in order to better support linkages to care for *all* PLWH post-release from corrections.

Given that all included studies took place in the United States, this review also points to a critical gap in knowledge surrounding interventions to support PLWH leaving prisons from other settings. Robust and high-quality trials in settings outside of the United States are needed that are tailored to specific settings. Here in British Columbia, Canada, for instance, ART is free of charge and readily accessible to all PLWH, as is blood work monitoring. Furthermore, all ART prescriptions are centrally monitored through the British Columbia Centre for Excellence in HIV/AIDS, which automatically alerts prescribers if any refill lapse occurs. These structures and circumstances may not be the case for all parts of the United States.

The scope of this review is further limited by the lack of quality studies that met inclusion criteria. There is insufficient literature for further objective appraisal such as meta-analyses. Also, ART side effect profiles and medication tolerance in general, with multiple single tablet regimens now widely available, is a more recent characteristic of HIV care. Older ART regimens may have independently contributed to poorer adherence in some of the trials.

CONCLUSION:

Based on this review, institutions aiming to improve care linkage and ART adherence for PLWH upon release from corrections should consider intensive case management, cell phone provision, incentivizing undetectable viral loads as well as engaging Peers to work with participants as navigators along criminal justice system trajectories. Facilitating support for addictions and addressing other social and structural barriers to achieving optimal health is also of vital importance in bridging the care gap.

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TABLES AND FIGURES

TABLE I. Search terms to identify studies describing trialed interventions aimed at improving Antiretroviral Therapy adherence in people living with HIV upon release from corrections	
Domain	**Terms**
People Living with HIV	MeSh Terms or Subject Headings or Keywords: "hiv"[MeSH Terms] OR "hiv infections"[MeSH Terms] OR ("hiv"[MeSH Terms] OR "hiv"[All Fields]) OR "acquired immunodeficiency syndrome"[MeSH Terms] OR ("acquired immunodeficiency syndrome"[MeSH Terms] OR ("acquired"[All Fields] AND "immunodeficiency"[All Fields] AND "syndrome"[All Fields]) OR "acquired immunodeficiency syndrome"[All Fields]) OR "acquired immunodeficiency syndrome"[MeSH Terms] OR ("acquired"[All Fields] AND "immunodeficiency"[All Fields] AND "syndrome"[All Fields]) OR "acquired immunodeficiency syndrome"[All Fields]
Incarceration	MeSh Terms or Subject Headings or Keywords: "prisoners"[MeSH Terms] OR "prisons"[MeSH Terms] OR "recidivism"[MeSH Terms] OR ((((((("detention"[All Fields] OR "detentions"[All Fields]) AND "center*"[All Fields]) OR (("detention"[All Fields] OR "detentions"[All Fields]) AND "centre*"[All Fields]) OR ("correctional"[All Fields] AND "facilit*"[All Fields]) OR "prison*"[All Fields] OR "jail*"[All Fields] OR "gaol*"[All Fields] OR "custod*"[All Fields] OR ("imprison"[All Fields] OR "imprisoned"[All Fields] OR "imprisonment"[All Fields] OR "imprisonments"[All Fields]) OR "incarcerat*"[All Fields]) AND {TermNotFound}) AND ("release*"[All Fields] OR "leav*"[All Fields] OR "post"[All Fields] OR "transition*"[All Fields] OR "re-entry"[All Fields] OR "re integrat*"[All Fields] OR "reintegrat*"[All Fields])) OR ("offender*"[All Fields] OR "convict*"[All Fields] OR "ex convict*"[All Fields] OR "ex prisoner*"[All Fields] OR "felon*"[All Fields]) OR ("re offend*"[All Fields] OR ("recidivate"[All Fields] OR "recidivated"[All Fields] OR "recidivating"[All Fields] OR "recidivism"[MeSH Terms] OR "recidivism"[All Fields] OR "recidivisms"[All Fields])))

ART	MeSh Terms or Subject Headings or Keywords: "anti retroviral agents"[MeSH Terms] OR "anti retroviral agents"[MeSH Terms] OR "antiretroviral therapy, highly active"[MeSH Terms] OR "antiretroviral therapy, highly active"[MeSH Terms] OR (("anti retroviral agents"[Pharmacological Action] OR "anti retroviral agents"[MeSH Terms] OR All Fields: ("anti retroviral"[All Fields] AND "agents"[All Fields]) OR "anti retroviral agents"[All Fields] OR "antiretroviral"[All Fields] OR "antiretrovirally"[All Fields] OR "antiretrovirals"[All Fields]) AND ("therapeutics"[MeSH Terms] OR "therapeutics"[All Fields] OR "therapies"[All Fields] OR "therapy"[MeSH Subheading] OR "therapy"[All Fields] OR "therapy s"[All Fields] OR "therapys"[All Fields]))

FIGURE I: PRISMA Flow Diagram

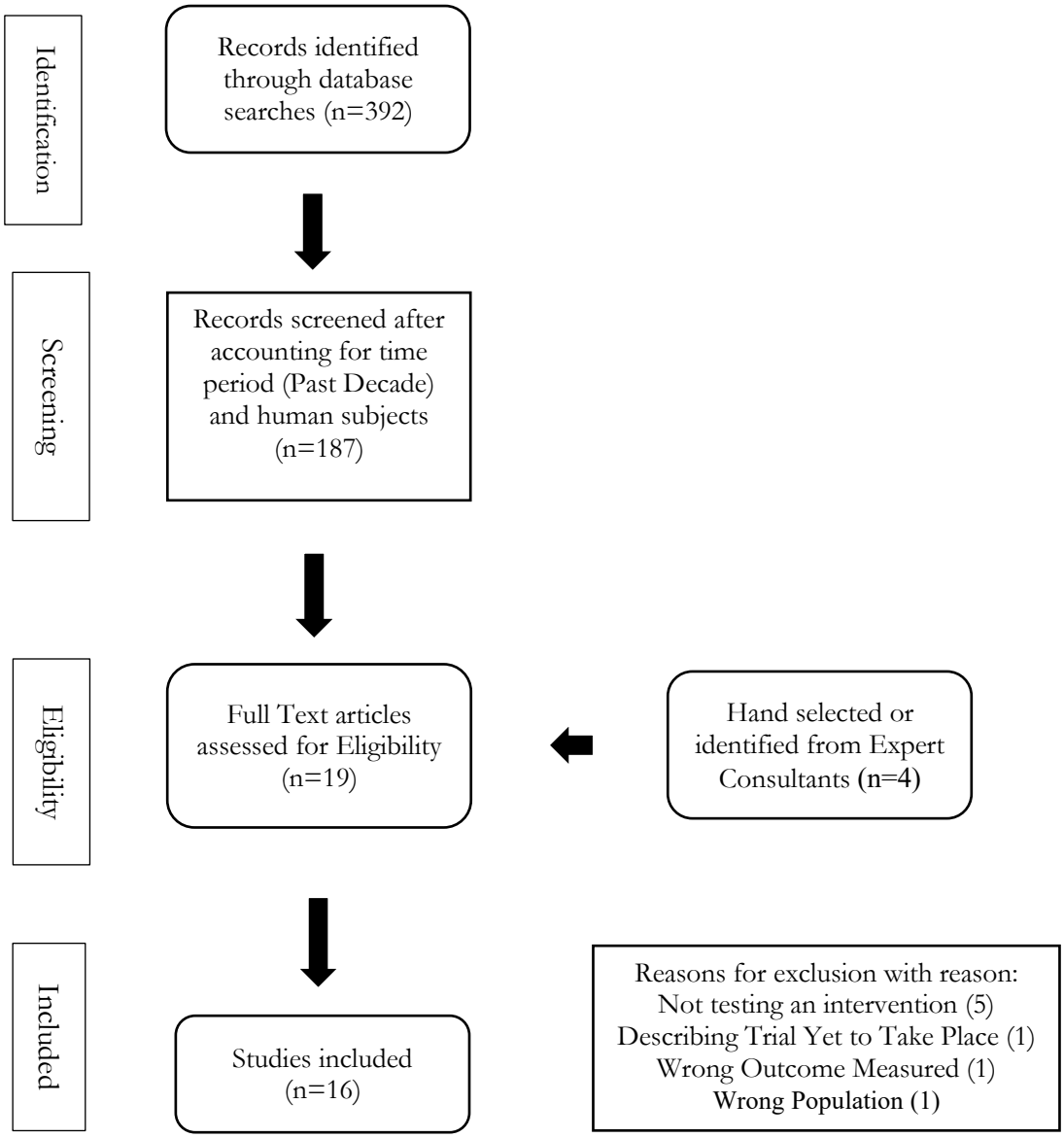

TABLE II: Characteristics, Interventions and Outcomes of Studies Meeting Inclusion

AUTHOR	Althoff (16)	Avery (44)	Beckwith (52)	Brantley (73)	Cunningham (47)	DiPrete (18)	Khawcharoenpom (74)
YEAR	2013	2019	2017	2019	2018	2019	2019
LOCATION	multisite, USA	Cleveland, Ohio, USA	Washington DC, USA	Louisiana, USA	Los Angeles, USA	Texas and North Carolina, USA	California, USA
DESIGN	Various multisite post-release	No comparison	RCT	RCT	RCT	RCT	RCT
N	N=867	N=74	N=110	N=238	N=356	N=302	N=110
STATISTICAL METHODS	Logistic regression, univariate assessment	Linear regression	chi-square tests or Fisher's	Multivariate logistic regression	ITT, generalized linear mixed	ITT, ordinary least squares regression	multivariable logistic regression
INTERVENTION	Various iterations of case management, large multisite project	Case Management	CARE + corrections (same RCT as Kuo trial)	Videoconferencing	Peer Navigation (in corrections and continued upon release)	IMPACT	Telephone contact week following release
ART ADHERENCE PROXY or CARE ENGAGEMENT OUTCOME MEASURED	Viral load suppression	Any HIV bloodwork within 6 and 12 months	Gender differences, care engagement.	Any HIV bloodwork within 90 days	Viral load suppression	Pill counts to infer ART adherence	Physician encounter within 6 weeks of
RESULTS	79% engaged in care within 1 month post release, but 62% lost by month 6	85.1% engaged in care within first 6 months,	No statistically significant differences	No difference	13.6% improved ART adherence in treatment arm	No difference	33% engagement increased to 58%

Wimberly (50)	Toegel (48)	Springer (51)	Spaulding (52)	Reznick (76)	Myers (49)	Kuo (75)
2020	2020	2012	2018	2013	2018	2019
Philadelphia, USA	Baltimore, USA	Connecticut, USA	Atlanta, USA	San Quentin and San Francisco, California, USA	San Francisco, USA	Washington DC, USA
RCT	RCT	RCT	Feasibility	RCT	RCT	RCT Feasibility Study
N=75	N=102	N=94	N=99	N=162	N=252	N=110
ITT, Fisher' s exact tests	Longitudinal logistic regression	Logistic regression	Eventflow Software, bivariate analysis	ITT, mixed logistic regression	Chi squared and expanded multivariable logistic	Univariable and multivariable regression analyses
Yoga therapy	10$ incentive for bloodwork yielding undetectable	Buprenorphine/naloxone	" SUCCESS" Sustained Unbroken Connection to Care EntryServices and Suppression	Ecosystem-Based	Peer Navigation	(CARE + Corrections) Computerized counselling session + tex messaging upon release(Feasibility of implementing the Beckwith model)
Rx refill and plasma viral load	Viral load suppression	Sustained viral load suppression	Care retention (2 lab collections) and viral load suppression	3 day medication adherence recall	Sustained viral load suppression and access of community care	Care engagement and plasma viral load at 3 and 6 months
No difference	Improved viral load suppression (41% suppressed in	Retention on bup/nal more likely sustained viral load	12% improved linkage vs. control group. Improved viral load suppression	15% less adherence in treatment group	No difference in viral load suppression, but community care visit within 1 month following release	No statistically significant differences between control and intervention group

Wohl (61)	2011	North Carolina, USA	RCT	N = 104	Linear regression	IMPACT (multidimensional, comprising of	Sustained viral load suppression, access of	No difference
Wohl (45)	2017	Texas and North Carolina, USA	RCT	N=405	ITT, logistic regression model,	Intensive Case Management upon release	Access of community care	No difference

TABLE III: Critical Appraisal (using JBI RCT checklist)

AUTHOR	SCORE /13
Althoff (16)	6
Avery (44)	6
Beckwith (52)	8
Brantley (73)	7
Cunningham (47)	12
DiPrete (18)	11
Khawcharoenporn (74)	11
Kuo (75)	8
Myers (49)	12
Reznick (76)	11
Spaulding (52)	11
Springer (51)	8
Toegel (48)	10
Wimberly (50)	9

Wohl (61)	12
Wohl (45)	11