

# A Review of HIV Prevention Interventions for Juvenile Offenders

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**Objective** To conduct a critical review of all HIV prevention intervention studies conducted with adolescents in juvenile justice settings to inform future intervention development. **Method** PubMed and PsycInfo database searches were conducted for peer-reviewed, published HIV prevention intervention studies with juvenile offenders. **Results** Sixteen studies were identified ( $N = 3,700$  adolescents). Half of the projects utilized rigorous methodologies to determine intervention effect on behavior change, such as conducting a randomized controlled trial ( $n = 8$ ). Nine studies reported behaviors at least 3 months post-intervention and five out of nine showed decreases in sexual risk behavior. **Conclusions** Several HIV prevention programs with juvenile offenders have led to sexual risk reduction, although effect sizes are modest. Most existing programs have neglected to address the impact of family, mental health, and substance use on HIV risk. More work is needed to develop evidence-based interventions that include HIV prevention strategies relevant and appropriate for the juvenile justice setting.

**Key words** adolescents; HIV prevention; offenders; review.

## Introduction

A recent proliferation of studies documenting rates of risk behaviors among youth involved in the juvenile justice system suggests that juvenile offenders are at increased risk for HIV and sexually transmitted infections (STIs) relative to their noncriminally involved peers (Teplin, Mericle, McClelland, & Abram, 2003). Juvenile offenders are particularly at risk for HIV because of their substantially higher rates of sexual risk behaviors and substance use (Castrucci & Martin, 2002; Kingree & Betz, 2003; Teplin et al., 2003). Juvenile offenders, compared with their peers, begin sexual activity earlier (Morris et al., 1995), have more partners (Canterbury et al., 1995), use condoms less often (Morris et al., 1995), use substances more frequently during sex (Kingree & Betz, 2003), and have higher rates of sexually transmitted diseases (STDs) and pregnancy (Morris et al., 1995; Nesmith, Klerman, Oh, & Feinstein, 1997; Widom & Hammett, 1996). Lifetime rates of injection drug use range from 2% to 23% among juvenile justice youth, depending on race and sex (Godin et al., 2003; Teplin et al., 2003).

Recent longitudinal data indicate that juvenile offenders continue to engage in high-risk sexual and substance use behaviors postrelease, upon community re-entry, which has significant public health implications (Elkington et al., 2008; Romero et al., 2007).

Juvenile offenders are also at heightened risk for HIV infection due to higher rates of psychopathology and substance use disorders, than their nonoffending peers. Adolescents with psychiatric disorders are at significantly greater risk for engaging in unprotected sexual behaviors than their peers who are not coping with mental health issues, primarily due to poorer impulse control and affect dysregulation that often underlie many psychiatric disorders (Brown, Danovsky, Lourie, DiClemente, & Ponton, 1997). Prior findings suggest that compared with youth with no legal involvement, youth with an arrest history have increased rates of substance use, psychiatric hospitalization, and suicidal attempts (Tolou-Shams et al., 2007). Incarcerated juvenile offenders with high negative affect have a significantly greater likelihood of using drugs and not using condoms during sex than those

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with low negative affect (Lucenko, Malow, Sanchez-Martinez, Jennings, & Devieux, 2003). Indeed, research suggests that juvenile offenders generally experience greater levels of emotional distress than their nonoffending peers (Malow, McMahon, Cremer, Lewis, & Alferi, 1997). Recent cross-sectional and longitudinal studies suggest that these higher rates of psychiatric and substance use disorders, including internalizing disorders, such as depression and anxiety, are associated with HIV risk for juvenile offenders (Domalanta, Risser, Roberts, & Risser, 2003; Otto-Salaj, Gore-Felton, McGarvey, & Canterbury, 2002). Among juvenile detainees, regardless of age or gender, 96% of those with comorbid substance use and mental health disorders have been sexually active, 62% have had multiple sexual partners in the past 90 days, and 59% have had unprotected vaginal sex in the past month (Teplin et al., 2005). Juvenile arrestees with clinically significant levels of depression are more likely to use substances during sex than their nondepressed counterparts (Tolou-Shams, Brown, Houck, Lescano, & Project SHIELD Study Group, 2008).

Although multiple studies have confirmed that juvenile offenders are at greater risk, few interventions have been developed and implemented to specifically focus on reducing HIV/STI risk among these youth. High rates of STIs, other than HIV, are documented. Compared with the total US population of the same age, the incidence of gonorrhea is 152 times and 42 times higher among confined juvenile females and males, respectively (Centers for Disease Control and Prevention & National Institute of Justice, 1996). Data are more limited, however, with respect to rates of HIV infection among detained youth. Rates of HIV are difficult to quantify due to lack of study, variability in population definitions, and differing screening criteria across states (Centers for Disease Control and Prevention & National Institute of Justice, 1996; Widom & Hammett, 1996). Given that other STI rates among juvenile offenders are so much higher than the general adolescent population, it is likely only a matter of time before rates of HIV infection among juvenile offenders becomes an urgent issue.

Among general adolescent populations, interventions with a focus on teaching and practicing skills (e.g., sexual communication, assertiveness, and condom negotiation skills) that consider relevant developmental processes are effective in reducing adolescent sexual risk behavior (Pedlow & Carey, 2004). A review of randomized controlled trials (RCTs) of adolescent sexual risk reduction interventions published from 1985 to 2000 revealed that adolescents in institutionalized settings are less likely to benefit from HIV prevention interventions than their

noninstitutionalized peers (Johnson, Carey, Marsh, Levin, & Scott-Sheldon, 2003). Thirteen HIV risk reduction studies with juvenile offenders were not included in this review due to either not meeting the inclusion criteria or were published since the review timeframe of 1985–2000. Many questions, therefore, remain about why RCTs that have documented efficacy with adolescents from the general population may not work with juvenile offenders to reduce their HIV risk. To better inform the development of future HIV prevention interventions for juvenile offenders, we therefore conducted the following narrative review and analysis of all existing published HIV prevention interventions for juvenile offenders.

## Methods

Literature searches were conducted via the *Medline* (searchable through *PubMed*) and *PsycInfo* databases. Initial study inclusion criteria were adolescent participants (13- to 18-years old), involved with the juvenile justice system, who received an HIV prevention or sexual risk reduction intervention and were evaluated in terms of HIV or sexual risk behavior and/or attitudes. Studies primarily focusing on pregnancy prevention were excluded. HIV risk behavior was primarily defined as sexual risk behavior for HIV infection (e.g., vaginal or anal intercourse without a condom). Given the few published studies with this population, we included one study (Straub, Pomputius, Boyer, Someillan, & Perrin, 2007) that examined HIV protective behaviors (i.e., HIV testing and counseling) after juveniles received a brief HIV prevention intervention.

Four categories of search terms were created to search peer-reviewed studies of intervention or prevention programs targeted toward change of sexual behaviors or attitudes among juvenile justice youth. Search term categories included: (i) population of interest (e.g., delinquent, criminal, juvenile offender, and incarcerated); (ii) HIV/sexual risk behavior or consequence (e.g., HIV, AIDS, STI, and unprotected sexual intercourse); (iii) intervention/prevention programs (e.g., prevention, intervention, and educational program); and (iv) cognitive/internal processes related to HIV/sexual risk behavior [e.g., attitude(s), belief(s), intention(s), and risk perception]. For each category of interest, the search yielded the following results in *PsycInfo*: Term 1 (juvenile justice) = 66,563; Term 2 (sexual risk behavior or consequence) = 258,371; Term 3 (prevention or intervention) = 353,935; and Term 4 (internal processes) = 439,558. The search yielded the following results in *PubMed*: Term 1

(juvenile justice) = 138,199; Term 2 (sexual risk behavior or consequence) = 1,375,972; Term 3 (prevention or intervention) = 1,190,112; and Term 4 (internal processes) = 808,292. We then combined searches in each database to yield studies in which both Terms 1 and 2 were present in combination with Terms 3 or 4. This yielded a total of 4,622 references in *PsycInfo* and a total of 9,138 references in *PubMed*. Limits were then set to select studies with adolescent participants (13–18 years of age) and studies that were published in peer-reviewed journals. The search in *PubMed* was set to include any of the following: clinical trial, meta-analysis, RCT, review, comparative study, NIH-controlled clinical trial, journal article, and multicenter study. These selections were specific to the *PubMed* search database and were therefore not replicated in *PsycInfo*. An extensive analysis of abstracts, and if necessary, a more exacting review of the entire article was conducted to identify those applicable for the inclusion criteria. This resulted in a total of 259 search outcomes across both databases.

In addition to a thorough database search, an ancestral search was conducted by reviewing reference sections of relevant papers to identify other relevant studies. Two studies were identified through ancestral search that were not discovered through database searches. Finally, nine studies retrieved across both database and ancestral searches included participants for whom the age range fell slightly outside the initial inclusion criteria of 13- to 18-years old (e.g., included 7- and/or 19-year olds). Given the strong content relevance of these studies and the few published articles yielded from database searches, the inclusion criteria were modified to allow a wider age range. The full search, therefore, resulted in a total of 16 studies for review.

We utilized a matrix methods approach for narrative analysis; a structure and process for systematically reviewing the literature that involves keeping a paper trail, organizing a documents section, creating a review matrix, and conducting a synthesis of the literature (Garrard, 2007). We constructed a review matrix (Supplementary Table 1) to describe and compare the following study characteristics: *sample* (sample size, sex, race, age, and setting), *intervention* [adapted evidence-based treatment (EBT), intervention approach, and other foci besides HIV], *study design* [use of random assignment, included comparison group (how many, type), intervention format, number of sessions, total intervention hours, and assessment schedule], and *study outcomes* [sexual behavior assessed, follow-up rate, main findings, and within- and

between-group effect size (ES)]. Information on study characteristics (including information about intervention content) was obtained solely from what was published.

### Calculating ES

Between- and within-group ESs were calculated for all results to estimate the magnitude of the intervention's impact on attitudes, knowledge, and behaviors. Eleven studies reported sufficient data to calculate an outcome ES. The authors of one study (Rosengard et al., 2007) provided additional data resulting in a total database of 12 studies. Data required from four studies were lost or unavailable (e.g., destruction, institutional move). Formulas for adjusted ESs (to account for influence of sample size) using Cohen's *d*, odds ratios (ORs for dichotomous data), and *r*-statistics (from independent test data) were used as per Durlak (2009). One study (Schlapman & Cass, 2000) required a formula for chi-square statistics (Lipsey & Wilson, 2001). Effects for correlational designs (*r*'s calculated for two studies) were transformed into Cohen's *d*-statistics to allow maximum comparability across studies.

All available statistics were included and treated as tests of independent hypotheses. Although this assumption is patently false (i.e., studies that measured multiple related attitude outcomes with the same participants represent dependent data), it is appropriate for this exploratory (and nonmeta-analytic) examination of theoretically interesting differences between the various outcomes (see Mullen, 1989 for a detailed discussion). Study outcomes were grouped into two categories: HIV/sexual risk behaviors, and HIV/sexual risk attitudes and knowledge. Separate within and between-subject behavior and attitude/knowledge ESs were calculated for each study outcome presented (Supplementary Table 2). An average study ES was then calculated for both behaviors and attitudes/knowledge, as relevant (supplementary tables). Finally, global within- and between-subject ESs were derived by averaging the mean ES of each study. This approach was selected so as to not overweight ES estimates in favor of studies that had more outcomes (e.g., Clark et al., 2000).

Positive ESs represent *safer* behaviors and attitudes/knowledge, while negative ESs represent *riskier* behaviors and attitudes/knowledge. For studies that had three group comparisons, ESs represent comparison of each active condition to the nonactive (or control) condition (i.e., the purpose of this review was not to determine the magnitude of effect in comparing two experimental conditions).

ESs represent the magnitude of intervention effect at either the immediate postintervention or 3 month postintervention follow-up [with the exception of St Lawrence, Crosby, Belcher, Yazdani, & Brasfield (1999) and Slonim-Nevo, Auslander, Ozawa, & Jung (1996) who reported on 6- and 9- to 12-month follow-ups, respectively].

## Results

### Sample Characteristics

Of the 16 studies that met the inclusion criteria (Supplementary Table 1), interventions were conducted primarily within detention facilities ( $n=12$ ), but also in less restrictive settings, such as residential programs ( $n=2$ ), alternative education ( $n=2$ ), and substance abuse treatment ( $n=1$ ) programs; one study (Straub et al., 2007) was conducted in two settings. The initial sample size of studies ranged from 36 to 925 participants. Across all studies, there were a total of 3,700 participants who provided follow-up data across various time points; eight studies had sample sizes of over 200 participants. The mean participant age was 16 years and the age range of participants was 7–19 years. Studies of mixed genders ( $n=10$ ) tended to include more male participants (31–90% of the sample). All but two studies, conducted in Canada (Godin et al., 2003; Goldberg et al., 2009), included youth from the United States. Many samples were comprised of primarily one racial or ethnic group and studies tended to include a larger proportion of African–American or Hispanic youth. Few studies reported sexual orientation. One study asked about sexual preference or orientation (Lanier & McCarthy, 1989), two studies reported measuring “homosexual sexual activity” or “homosexual behaviors,” but did not define those behaviors (Lanier & McCarthy, 1989; Shelton, 2001), and one study (Magura, Kang, & Shapiro, 1994) reported excluding the small percent of the sample who did not report “heterosexual sex.”

Studies reported high rates of co-occurring HIV risk factors, such as substance use and psychopathology. For instance, in one study, 68% of the incarcerated youth reported clinically significant levels of depressive symptoms (Rosengard et al., 2007). Godin and colleagues (2003) reported that 92% of their sample endorsed lifetime use of any drug and 23% endorsed intravenous drug use at least once. Clark and colleagues (2000) reported that the average number of times youth used alcohol, marijuana, and cocaine over the 2 months prior to incarceration was 12, 28, and 14 times, respectively. Schmiede, Levin, Broadus, & Bryan (2009) reported that 91% of

the juvenile detainees used alcohol in the prior year (average of 4.67 drinks per drinking occasion) and 82% of the juvenile detainees used alcohol at least once during sex.

## Intervention

### Adapted EBT

While several studies reported that their program was an adaptation of an existing HIV prevention program, only two interventions (Lightfoot, Comulada, & Stover, 2007; St Lawrence et al., 1999) were adaptations of best-evidence HIV behavioral interventions as listed by the Centers for Disease Control and Prevention (2007). Lightfoot et al. (2007) tested a computerized version of Project LIGHT, a group, skills-based HIV prevention intervention with established efficacy in reducing HIV risk among high-risk individuals (i.e., sexually active, low-income, and inner city patients at HIV/STD clinics). St Lawrence and colleagues (1999) adapted *Becoming a Responsible Teen* (BART) that teaches skills in five areas, including correct condom application, partner communication about condom use, and assertive communication about unwanted sexual activity. The BART program has demonstrated efficacy in reducing HIV risk among African–American adolescents. Eight other studies were guided by behavioral theories or approaches (e.g., theory of reasoned action, motivational interviewing) that have been used widely to direct the development of HIV risk reduction interventions with other populations (e.g., men who have sex with men [MSM]).

### Approach and Other Foci

In terms of content or focus, it appeared that the majority of the studies implemented an HIV informational and/or skills-based approach to risk reduction. Four studies described delivering HIV-related educational content to youth in a didactic format and did not report teaching skills or practice (Lanier & McCarthy, 1989; Schlapman & Cass, 2000; Shelton, 2001; Straub et al., 2007). Four interventions incorporated a peer educator component (Clark et al., 2000; Gillmore et al., 1997; Kelly, Martinez, & Medrano, 2005; Shelton, 2001), and one study employed a case management approach (Needels, James-Burdumy, & Burghardt, 2005) as the vehicle for providing HIV/AIDS education. Many studies reported providing a description of condom use skills and gave examples of assertive communication strategies with peers and partners, but did not explicitly report providing skills-based practice related to condom use (e.g., on penis models) or partner communication (e.g., role plays).



Only three studies specifically reported including behavioral skills and practice related to condom use (Godin et al., 2003; Schmiede et al., 2009; St Lawrence et al., 1999). St Lawrence and colleagues (1999) directly observed and measured behavioral skill in correct condom use (on penis models) pre- and postintervention. One study noted that their funding source would not allow for condom demonstrations (Schlapman & Cass, 2000). Seven studies included interventions aimed at non-HIV health or risk behaviors such as substance use (Magura et al., 1994; Needels et al., 2005; Rosengard et al., 2007; Schmiede et al., 2009; Shelton, 2001; Slonim-Nevo et al., 1996), dating violence (Kelly et al., 2005), mental health problems, and connections to health and social services (Magura et al., 1994; Needels et al., 2005).

## Design

### Random Assignment

Eight of the 16 studies conducted RCTs (Gillmore et al., 1997; Goldberg et al., 2009; Lightfoot et al., 2007; Needels et al., 2005; Rosengard et al., 2007; Schmiede et al., 2009; Slonim-Nevo et al., 1996; St Lawrence et al., 1999). All RCTs employed random assignment of individuals to conditions with the exception of three studies. Gillmore and colleagues (1997) conducted an ABC design of three conditions applied in a random sequence to groups of individuals who were in the detention facility within a particular week. Thus, each site was exposed to all three conditions in a random, sequential fashion. Schmiede and colleagues (2009) applied a similar ABC design using a random numbers table to assign individuals to one of three conditions to occur on a particular day within the same facility. Slonim-Nevo and colleagues (1996) randomized 15 sites to one of three conditions. Active interventions were compared with control conditions that varied in terms of content, format/facilitation, and/or duration/frequency. Goldberg and colleagues (2009) randomized individuals by condition, but conducted randomization and groups separately for males and females due to facilities being segregated by gender.

### Comparison Groups

Six of the eight RCT studies compared intervention content [e.g., psychosocial HIV prevention versus psychosocial HIV prevention plus alcohol risk reduction motivational enhancement (Schmiede et al., 2009)]. Five studies compared intervention format [e.g., individual computerized versus small group (Lightfoot et al., 2007)] and three of the eight RCTs compared intervention duration or frequency [e.g., time-intensive discharge planning and postrelease community case management services versus

less-intensive discharge planning program (Needels et al., 2005)]. Four studies included differences in content, format, and intervention duration across all arms; however, an insufficient number of conditions made it impossible to disentangle the potential effects of these differences (Gillmore et al., 1997; Goldberg et al., 2009; Needels et al., 2005; Slonim-Nevo et al., 1996).

### Quasi-experimental Approaches

Due to difficulties in implementing true RCTs in juvenile justice facilities, alternative study designs were used by several investigators. System constraints, such as the facility director assigning participants to groups due to concerns about group dynamics (Godin et al., 2003) and earlier than anticipated discharge dates (Clark et al., 2000), made a true experimental design impossible in some settings. For instance, Godin and colleagues (2003) randomly assigned already identified cohorts (similar to classrooms) to intervention groups. Clark and colleagues (2000), however, modified their study inclusion criteria for the intervention condition to account for date of discharge so that they could be assured that participants would not be discharged before the intervention was complete. Kelly and colleagues (2005) employed a lagged design by delivering the intervention in the same residential facility to all residents and then offering the control condition 8 weeks later to all residents present at that time.

### Intervention Format

The majority of interventions had four or more sessions (range = 4–16 sessions), with modal length of 1 hr per session. Total program time ranged from 2 to 24 hr. Group attendance rates ranged from 66% (Schlapman & Cass, 2000) to 100% (Clark et al., 2000; Kelly et al., 2005; Straub et al., 2007). The primary reason for nonattendance was earlier than anticipated discharge from the facility either to the community or another detention facility. Twelve interventions were delivered in a group format. Two programs utilized peer educators to deliver the program, often in conjunction with facilitators with more professional training, education, and experience (Gillmore et al., 1997; Kelly et al., 2005). Two other programs were led by trained facilitators but employed a peer education approach to empower juveniles to become peer leaders in reducing HIV risk in their communities (Clark et al., 2000; Shelton, 2001). Only one intervention (Kelly et al., 2005) was specifically designed for adolescent girls and included material on reducing dating violence. All other group interventions were of mixed gender except that of Goldberg and colleagues (2009). Individually delivered interventions included the following: (i) a computerized intervention

(Lightfoot et al., 2007); (ii) a case management approach (Needels et al., 2005); (iii) a motivational interviewing session (Rosengard et al., 2007); and (iv) a psychoeducational booster session delivered 3 months after the group intervention (Goldberg et al., 2009). With the exception of Needels and colleagues' (2005) postrelease community case management services intervention and Schlapman and Cass' (2000) educational intervention that invited parents to the last four sessions, none of the interventions incorporated other systems, such as family or schools.

### Assessment Content and Schedule

The majority of studies employed a pre- and immediate post-test design to determine the effects of the intervention on HIV-related knowledge, attitudes, intentions, and behaviors. Nine studies assessed sexual risk behavior postintervention during community re-entry. None of the studies presented biological data as outcomes, such as testing results for the presence of STIs. Many studies measured sexual and substance use behaviors at baseline, but these behavioral reports were often confounded by incarceration. The definition of sexual risk varied across studies in that some studies explicitly defined sexual risk as vaginal or anal sex (Needels et al., 2005; Slonim-Nevo et al., 1996; St Lawrence et al., 1999) and other studies provided no definition (Lightfoot et al., 2007). Two studies reported measuring unprotected oral sex (Magura et al., 1994) and any oral sex (St Lawrence et al., 1999).

Nine studies followed participants for at least 3 months postintervention, and six of these studies conducted assessment follow-ups beyond a 3-month time point (Gillmore et al., 1997; Goldberg et al., 2009; Magura et al., 1994; Needels et al., 2005; Slonim-Nevo et al., 1996; St Lawrence et al., 1999). Retention declined over the follow-up period ranging from 65% to 97% at 3-month follow-up (Gillmore et al., 1997; Rosengard et al., 2007; Schmiede et al., 2009), 60–88% at 6-month follow-ups (Goldberg et al., 2009; St Lawrence et al., 1999), and 61–76% for 9+ month follow-ups (Magura et al., 1994; Needels et al., 2005; Slonim-Nevo et al., 1996). Schlapman and Cass (2000) reported the lowest follow-up retention rate (47%; 69 of 146 detainees), but for immediate post-test follow-up. The authors noted that tracking detainees was difficult due to the transfer of detainees to other sites in the midst of the intervention and limited post-test contact.

## Outcomes

### Sexual Risk

Of the nine studies that assessed sexual risk behavior after juvenile offenders were released back to the community,

five studies demonstrated a decrease in sexual risk behavior over time [ $M$  within-subjects Cohen's  $d = .23$  (no range due to only one study with available data)] and/or across groups [ $M$  between-subjects Cohen's  $d = .18$  (range = .09–.28)] suggesting that the magnitude of the reduction on HIV risk behaviors was small [(Cohen, 1988); Supplementary Table 2]. However, these effects are similar in magnitude to those found for HIV risk behavior outcomes, such as condom use and frequency of sexual activity, with other adolescent populations (Johnson et al., 2003). Lightfoot and colleagues (2007) found that youth who received an individual, computerized intervention reported less sexual activity and fewer partners than youth who received the equivalent intervention content but in a small group setting. Youth in the computer condition and in the small group condition also reported fewer sex partners than the control condition ( $d = .09$  and  $.10$ , respectively). Rosengard and colleagues (2007) reported that their motivational enhancement treatment led to increased condom use, but only in the context of using marijuana during sex ( $d = .20$ ; i.e., there was no treatment effect for alcohol use during sex,  $OR = 1.12$ ). A treatment effect was also reported for juvenile offenders who were less depressed at baseline. Goldberg and colleagues (2009) reported that females receiving the enhanced intervention (education only plus booster) were four times more likely to report using condoms all the time (ES data unavailable). Risky sexual acts also decreased for adolescents receiving an enhanced intervention (group psychosocial HIV prevention plus alcohol risk reduction motivational enhancement vs. an information-only control condition,  $d = .41$ ) (Schmiede et al., 2009). Finally, Magura and colleagues (1994) found that juveniles who participated in the AIDS education program reported significantly greater frequency of condom use during vaginal, anal, and/or oral sex than those not receiving the intervention (ES data unavailable).

### Substance Use and Mental Health

Four studies (Goldberg et al., 2009; Magura et al., 1994; Needels et al., 2005; Schmiede et al., 2009) that incorporated baseline data on co-occurring risk factors (e.g., mental health status and substance use) reported outcome data on these same variables. Needels and colleagues (2005) reported that juveniles assigned to the intervention group reported significantly better substance use outcomes (i.e., greater percentage in residential substance abuse treatment, less drug and alcohol use by self-report, and less cocaine/crack use through toxicology analysis of hair samples) than those who were in the standard of care control condition. Some decline over time in drug use

was reported in Goldberg et al.'s (2009) study; however, there was no difference between intervention and control conditions. The remainder of studies similarly indicated minimal group differences in general substance use (Magura et al., 1994) or alcohol use during sex (Schmiege et al., 2009).

### HIV-related Attitudes and Knowledge

Of the 13 studies that described measuring HIV-related attitudes and knowledge, all but one study (Straub et al., 2007) reported some change in HIV-related attitudes, intentions, or knowledge related to the intervention over time [ $M$  within-subjects Cohen's  $d = .50$  (range = .27–1.09)] and/or across groups [ $M$  between-subjects Cohen's  $d = .32$  (range = .06–.64)] suggesting medium effects of the interventions on improving HIV-related attitudes and knowledge (Cohen, 1988). A wide range of improvements was reported in HIV-related knowledge (e.g., less fear of daily activities with someone who is HIV-infected, knowledge of blood transfusion risk) and attitudes (e.g., improvement in HIV self-efficacy and self-esteem, condom-related beliefs, and greater safer sex intentions). ESs derived for these studies are similar to study findings among other adolescent populations that suggest HIV prevention interventions result in moderate improvements in adolescent attitudes and knowledge (Kim, Stanton, Li, Dickerson, & Galbraith, 1997).

### Discussion

Only a few HIV prevention programs have been conducted and empirically tested among adolescents involved in the juvenile justice system. Of the eight RCTs conducted with this population, four found main effects of HIV prevention programs on sexual risk behavior. Consistent with prior literature, interventions were more successful in improving HIV-related attitudes and knowledge than affecting behavioral change (Kim et al., 1997). Although the magnitude of the behavioral effects of these programs appears small (Cohen, 1988), the behavioral impact of the few HIV prevention interventions for juvenile offenders must be considered within the larger context of similar modest reductions observed with other adolescent populations (Durlak, 2009; Kim et al., 1997). Problems with the research design and methodology, content of the programs, and/or delivery of the programs may account for the failures to find stronger intervention effects on behavior. In the current exploratory review, behavioral ESs are based on only four studies; therefore, it is also difficult to confidently estimate the true behavioral impact of interventions for this population. Nevertheless,

these preliminary data can be useful in providing some guidance for HIV prevention intervention development. Recommendations for future directions are provided.

### Challenges with Research Design and Methodology

Four studies did not include a control or comparison condition. Rather, these studies used a pre/post-test design within a single intervention to determine changes in attitudes thought to be associated with sexual risk behavior. This approach has notable limitations. Without a control group, it is impossible to attribute changes in attitudes to the intervention. Among adolescents, maturation effects are expected over time and for those in juvenile justice settings, the impact of detention and attention from interventionists may produce nontrivial changes. Control conditions are needed to account for these effects.

Randomization presents another challenge; only half of the identified studies used randomization techniques. Studies that randomize participants to conditions are more methodologically sound and provide a more clear interpretation of research findings. Without randomization, it is difficult to separate the effects of the intervention from effects of the group or from an event shared by group members (e.g., changes in rules, structure, and staff). However, randomization procedures are difficult to implement in juvenile justice settings. Residents often interact in a milieu setting where contamination effects are difficult to prevent. To address this, some studies utilized lagged designs or randomization by site. Yet, contamination effects may still occur with lagged designs as release dates vary widely among those detained and it is difficult to keep those who received the intervention from interacting with those in the control condition. In addition, detention sites can vary widely and intervention effects can be easily confused with site effects when the number of sites is small.

The best evidence of an effective HIV prevention program is sexual risk reduction. However, only a little over half of the identified studies measured sexual behavior change postintervention after participants had returned to the community. Measuring behavior change is often challenging, especially in juvenile justice settings. Presumably, few opportunities for sexual risk behavior occur during detention or incarceration and, therefore, researchers are often interested in measuring sexual risk behavior after adolescents are released. Time between intervention and release is likely to vary widely among participants and none of the studies accounted for this factor. A second challenge for measuring behavior change among this population is locating participants to conduct follow-up interviews.

In fact, retention rates were only 61–76% among the studies that conducted a 9-month or longer follow-up assessment.

### **Effective HIV Program Content**

Half of the RCTs testing HIV prevention program efficacy with juvenile justice youth demonstrated evidence for decreasing sexual risk behavior. Findings suggest the utility of adapting evidence-based interventions for this population. Moreover, these findings implicate affect management, motivation, and skills training as important targets of sexual risk reduction interventions for adolescents in the juvenile justice system.

Lightfoot and colleagues (2007) and St Lawrence and colleagues (1999) adapted well-established HIV prevention programs to the juvenile justice setting. While the former study demonstrated effects on reducing sexual risk behavior, the latter demonstrated advantages of the HIV prevention program over an anger-management program immediately postintervention; however, these behavioral differences did not remain at the 6-month follow-up. The lack of long-term changes could be due to contamination effects created by delivering two conditions in the same facility and by instructing those in the HIV prevention group to provide information to peers. Moreover, the original evidence-based program (BART) was truncated to fit into the juvenile justice setting and this shortened program may have been less effective.

The studies by Rosengard and colleagues (2007) and St Lawrence and colleagues (1999) suggest that mood and emotions may be important in reducing sexual risk behavior among those in juvenile justice settings. The former study demonstrated a treatment effect of a motivational interviewing intervention among a subset of youth without depressed mood, suggesting that feelings of sadness and despair may be a barrier to benefiting from HIV interventions. The latter study found that adolescents who received an anger-management program showed similar reductions in sexual risk behavior to those who received the empirically supported HIV prevention program, suggesting that both programs may have been effective. Research suggests that emotional dysregulation may increase sexual risk behavior or serve as a barrier to safer sex practices (Lescano, Brown, Miller, & Puster, 2007). Perhaps, youth who learn skills to identify and manage feelings such as anger are better able to reduce sexual risk behavior and/or increase protective behaviors.

Most of the studies identified for this review included one or more skills-based intervention component. These studies demonstrated that skills training is associated with improvements in behavioral skills and attitudes, related to

condom use, self-efficacy, self-esteem, perceived susceptibility, and knowledge about HIV/STDs. Of note, St Lawrence and colleagues (1999) measured condom use skills and found significant improvements in all six condom skills (e.g., retains air pocket at tip of condom) among those in the HIV prevention program (BART) relative to those in the anger-management condition.

### **Program Delivery**

The timing of HIV prevention program delivery for adolescents in the juvenile justice system may be important. During incarceration, opportunities to engage in sexual behavior may seem distal and motivation to change may be low. Conversely, incarceration may be a time of reflection and an opportunity to re-establish goals. Programs designed to increase motivation to change sexual risk behavior during detention may be beneficial and detention programs that have incorporated substance use related motivational enhancement strategies appear to be associated with sexual risk reduction (Rosengard et al., 2007; Schmiege et al., 2009).

The transition from incarceration to re-entry in the community is likely challenging for adolescents and many youth will encounter a multitude of risky situations. Interventions that continue during the community re-entry period may be beneficial in producing lasting changes in behavior and have more significant impact on public health. For example, Needels and colleagues (2005) examined differences in HIV risk behavior among adolescents who received case management during detention and those who received additional postrelease case management services and found no HIV prevention benefit of those postrelease services. However, intensive case management services were described as crisis intervention, counseling, and referral to services for substance abuse, health, and other problems; no specific HIV prevention services were described. Therefore, it is possible that in order for case management services to be effective in reducing HIV risk postrelease, a more specific and detailed focus on HIV risk reduction needs *while in the community* is warranted. More research is clearly needed to determine the benefit of targeted HIV prevention programs that extend beyond incarceration or detention periods.

Some novel program delivery approaches are promising for HIV prevention among adolescents in the juvenile justice system. Computer-based interventions demonstrated changes in behaviors (Lightfoot et al., 2007), while peer-delivered interventions demonstrated improvements in self-efficacy, knowledge, and motivation to change (Kelly et al., 2005; Shelton, 2001). Computer-delivered programs are generally brief, easy to administer,



do not require trained facilitators, can be provided on a case by case basis, and can be offered to all youth in a juvenile justice setting, regardless of their length of stay. Peer-delivered interventions may be useful because they capitalize on positive peer-pressure and prosocial influence, which may be particularly salient to adolescents (Ozer, Weinstein, Maslach, & Siegel, 1997).

While these novel approaches appear promising, one relatively unexplored area in the HIV prevention literature for juvenile offenders is family-based intervention. Given that adolescents in the juvenile justice setting who are released back into the community will return to the care of adults, such as parents, relatives, or foster care, family-based interventions may be especially relevant in reducing HIV risk behavior (Pequegnat & Szapocznik, 2000). Empirically supported family-based interventions that have been successful in reducing substance use and antisocial behavior among offenders, such as multisystemic therapy (Henggeler, Schoenwald, Borduin, Rowland, & Cunningham, 1998) and multidimensional family therapy (MDFT; Liddle, Dakof, Parker, Diamond, & Barrett, 2001), may provide useful models for developing family-based HIV prevention interventions for these youth. Liddle and colleagues (2001) are among the first who recently developed and tested a family-based intervention that targets substance abuse and HIV prevention among detained juvenile offenders re-entering the community (MDFT-HIV/STD). Although detailed outcome data were not available at the time of this writing, preliminary findings suggest HIV risk reduction among young offenders receiving the MDFT-HIV/STD prevention module (Marvel, Rowe, Colon-Perez, DiClemente, & Liddle, 2009).

### **Limitations**

The results presented in this narrative review should be considered in light of some limitations. First, descriptions of intervention content and study details for outcome papers are often truncated due to journal page limitations. Therefore, our review was limited to reporting only what was available to us through published studies, and some important intervention content or study details may have been omitted. However, we treated all studies similarly by using a consistent approach of relying solely on published material for all included studies. Second, given that there were only 16 published studies and only 12 with available data to calculate ES, the variability of study design, assessment methods, and types of outcomes limited our ability to confidently judge the magnitude of ES for these interventions (Durlak, 2009). However, it is important to note that the purpose of this review was not to conduct a detailed meta-analysis, but rather an exploratory

(and nonmeta-analytic) first examination of HIV prevention intervention impact for juvenile offenders.

### **Future Research**

The literature reviewed here suggests many promising directions for future research. First, we recommend that more RCTs using evidence-based HIV prevention programs be empirically tested in juvenile justice settings. Randomization procedures should be utilized; however, researchers will have to weigh the costs and benefits of randomization with programs conducted concurrently in the same setting (e.g., contamination effects), lagged designs, or randomization by group (e.g., individuals living in residential cottages or grouped by classroom) or site. Second, control or comparison groups should be utilized, with careful consideration of the program content for the comparison group. Third, studies should include retrospective measures of sexual risk behavior at preincarceration as well as at postintervention and postrelease. Data analysis should control for the time spent postrelease, as opportunities for sexual risk behavior may be related to how much time an adolescent has spent in the community. Fourth, no studies have examined changes in sexual risk or victimization that occur during incarceration or the occurrence of same-sex risky sexual behavior while detained; these may be important areas of exploration.

More work is needed to adapt evidence-based HIV prevention programs to the juvenile justice population. None of the programs cited adaptations that were intended to address cultural, racial/ethnic, sexual orientation, or gender issues relevant to this population. There is some evidence that computer-delivered and peer-delivered programs may be beneficial for this population; however, more work is needed to know which delivery formats are most effective. Affect management may be an important target of intervention for this population, given the high rates of psychiatric disorders and substance use. However, few programs targeted either of these co-occurring risk factors. Many programs were provided during incarceration, while few provided services to adolescents after their release back to the community. This is a vulnerable time for adolescents and HIV prevention services delivered upon re-entry into the community may be particularly effective. Finally, although one study invited parents to attend a final group session, none of the programs addressed family functioning. Most adolescents in the juvenile justice system will eventually return to a family system. Efforts to improve family functioning, parent-adolescent communication about sex, and to increase parental monitoring to reduce opportunities for risky behavior may be beneficial for adolescents in the juvenile

justice system. Marvel and colleagues' (2009) incorporation of HIV/STD prevention into MDFT is pioneering and encouraging, but more efforts to develop or adapt family-based interventions and empirically test them among young offenders and their families are needed.

## Supplementary Data

Supplementary Data are available at *JPEPSY* Online.

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