Published in final edited form as:

J Subst Abuse Treat. 2015 November ; 58: 25–32. doi:10.1016/j.jsat.2015.05.007.

Evaluation of *WaySafe*: A Disease-risk Reduction Curriculum for Substance-Abusing Offenders

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Abstract

With a focus on reducing disease risk behavior in the community, a six-session curriculum, *WaySafe*, was developed to increase positive decision-making skills among soon-to-be-released inmates participating in a therapeutic community substance abuse treatment program. The intervention used TCU Mapping-Enhanced Counseling as an approach to focus on cognitive aspects of risky sexual and drug use behaviors in an effort to improve problem recognition, commitment to change, and strategies for avoiding behavioral risks of infections. A total of 1,393 inmates from eight different institutions in two states were randomly assigned to receive *WaySafe* or treatment as usual (TAU). Baseline and follow-up surveys measured knowledge, confidence, and motivation regarding general HIV information, risky sex and drug use, HIV testing, and risk reduction skills. *WaySafe* participants had significantly better scores on all measures at follow-up than did TAU participants, supporting the efficacy of *WaySafe* in improving knowledge, motivation, and confidence in avoiding risky behaviors.

Keywords

Prison-based substance abuse treatment; Offenders; HIV risk behaviors; TCU Mapping-Enhanced Counseling; Risk reduction

1. Introduction

At the end of 2011, roughly 1.1 million persons in the US were living with HIV/AIDS, with approximately 50,000 new cases being confirmed each year (Centers for Disease Control and Prevention, 2013a). An estimated 1 in 7 people who are HIV+ pass through a correctional facility annually, and prison is often the first place that offenders are diagnosed with HIV and provided treatment, although most acquired HIV in the community (CDC, 2013b). In 2008, 1.4% of the total prison population was reported to be living with HIV or

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AIDS (approximately 28,000 out of the 2 million currently incarcerated). In 2007, the rate of confirmed AIDS cases among state and federal prisoners was about 2.4 times the rate in the general U.S. population (CDC, 2013b). In 2003, about 15,000 seropositive prison inmates were being paroled annually (Stephan & Karberg, 2003). The CDC also estimates that 16% to 41% of inmates in U.S. jails and prisons have ever been infected with Hepatitis C (HCV) and 12% to 35% are chronically infected compared to 1% to 1.5% of the general U.S. population (CDC, 2011). HCV can easily spread between inmates through sharing of clandestine tattoo equipment or even fighting when blood is present.

In Texas, seroprevalence rates among a sample of 4,386 newly admitted inmates showed 2% of males and 9% of females were infected with HIV, and they vary further by race and correctional setting (Wu et al., 2001). High-risk drug use and sexual practices are common among criminal justice (CJ) populations and are the two primary contributors to the high rate of HIV/AIDS cases (Inciardi, 1993). In an in-custody drug treatment program in Texas, for example, Knight et al. (1997) found that nearly half of all program admissions reported injection drug use (IDU) within the 6 months preceding custody and nearly two-thirds reported risky sexual practices. Nearly all these at-risk individuals will return to their communities where they, in very large part, will continue to pose a risk to themselves and the health and safety of others. It is urgent that behavior change programs capable of reducing these dangers are instituted during the time offenders are under CJ supervision. While disease risk among many individuals involved in the criminal justice system poses a threat to public health, the criminal justice setting also provides a potential avenue for reducing this threat.

Drug treatment programs within correctional facilities can be seen as providing a unique opportunity to address health risks these individuals present to the community (Freudenberg, 2001). On the one hand, offenders at heightened risk for HIV infection have been filtered from the larger correctional population for assignment to drug treatment programs. On the other, those assigned or volunteering for drug treatment are already likely to be more invested in a significant health-oriented behavior change initiative than non-participants. Thus, drug treatment programs within correctional settings represent important access points for providing a range of services to large numbers of high-risk drug users. By virtue of the close and continuing supervision of the correctional population, institution-based programs also are venues that allow comparatively long-term, staged multi-session interventions to be delivered efficiently to treatment clients. Indeed, recent evaluations of HIV/AIDS multi-session prevention/intervention programs implemented in US correctional settings indicate they have the *potential* to influence offenders to reduce their risk-taking behaviors. For example, Bauserman et al. (2003) found a relationship between HIV prevention efforts and reductions in offender high-risk sexual activity and injection drug use. In Texas, a peer education program was found to significantly increase knowledge and self-assessed skills for reducing risk taking (Ross et al., 2006).

Unfortunately, well established and consistent use of HIV/AIDS risk reduction prevention/intervention programs with continuity of care do not exist in most CJ treatment systems because of widespread lack of policy protocols and integration between institution and community-based corrections, health, and social service agencies. While over 2 million

individuals are currently incarcerated in the US, there are approximately 5 million offenders under community supervision (Bureau of Justice Statistics, 2004). Drug use in this population is common, with 41% of probationers in 1996 having had drug treatment as a special condition, and 33% having had a drug testing requirement (Bonczar, 1997). Clearly, to meet the challenge of serving HIV-infected and at-risk offenders re-entering the community, a deliberate and coordinated continuum of risk-reduction services is needed that begins during custody (as part of a drug treatment program) and is integrated with the delivery of continuing care services upon re-entry into the community. In particular, risk reduction approaches for CJ populations are needed that have the capability of addressing motivational, social, and cognitive deficits.

Research on behavioral interventions to reduce HIV risk reduction have shown them to be effective. A meta-analysis of 37 randomized controlled trials (RCTs) involving 49 risk reduction interventions involving over 10,000 participants (Copenhaver et al., 2006). Overall, they found that interventions promoted entry to treatment (for those not currently in treatment), and helped reduce non-injection drug use (IDU) and sex trading regardless of other interventions or participant characteristics. Condom use was enhanced and IDU reduced but these effects varied according to features of the interventions or participant characteristics.

In spite of the potential for success of behavioral interventions to reduce HIV risk behaviors, few have been conducted in prison settings. One exception is an intervention designed around risky relationship myths conducted in four women's prisons (Leukefeld et al., 2012). The intervention helped women offenders use relationship thinking myths in their decision-making process to generate alternatives to risky thinking to make better decisions about risk behaviors. Follow-up results after the women were released into the community showed that women randomly assigned to receive the intervention were more likely than control subjects to report improvements in five of seven risky relationship thinking myths.

Another study involving male prisoners, Grinstead, Zack, Faigeles, Grossman, and Blea (1999) used peer educators to deliver a brief risk assessment and risk reduction plan to prisoners shortly before release back to the community. Prisoners were randomly assigned to receive the intervention or to a no intervention group and follow-up interviews were conducted about two weeks after releases. Grinstead et al. reported that participants who received the intervention were more likely to use a condom the first time they have sex after leaving prison compared to those who did not receive that intervention.

The present study, based on participants from eight correctional facilities in two states, describes the development and testing of *WaySafe*, an intervention designed to reduce the risk for HIV and other infectious diseases among soon-to-be-released inmates participating in an in-prison therapeutic community drug treatment program. The intervention targets inmates in the last phase of their substance abuse treatment, a critical pre-release period where there are challenges to engaging and convincing offenders with a history of substance abuse problems to adequately plan and apply risk reduction principles during their crucial post-release community re-entry phase. *WaySafe* also takes into account that correctional

systems are often fragmented, representing another challenge to efforts to provide integrated care and supervision to offenders at-risk for infectious diseases.

1.1. WaySafe

WaySafe is a short 6-session curriculum developed to improve decision-making skills regarding disease-risk reduction behaviors after release from prison back to the community. The curriculum focuses on improving decision-making and intentions regarding risk-behaviors. It is intended to be delivered to inmates during the last months before release from prison. The curriculum is based in part on Fishbein & Ajzen's (Fishbein & Ajzen, 1975; Ajzen & Fishbein, 1980) Theory of Reasoned Action, which posits that behavior will be most closely associated with behavioral intentions.

WaySafe utilizes TCU Mapping-Enhanced Counseling, an evidence-based graphic representation strategy used to visually enhance the counseling process, both between counselor and client(s) or as part of the presentation and implementation of TCU intervention manuals (Dansereau, Joe, & Simpson, 1993; Dees, Dansereau, & Simpson, 1994). A conceptual overview of this approach is published in *Professional Psychology: Research and Practice* (Dansereau & Simpson, 2009). It has proven to be an effective strategy for increasing client motivation, engagement, participation, and retention in treatment by promoting more positive interactions with other clients and treatment staff. It facilitates communication, memory, and problem-solving during counseling sessions, and also helps document progress both within and across sessions (see Dansereau, 2005, for a review). Mapping approaches have been shown to help clients and counselors examine treatment-related issues (Dansereau & Dees, 2002; Newbern, Dansereau, Czuchry, & Simpson, 2005), and they have been incorporated into a series of effective modular interventions that cover specific counseling topics such as motivation and communication (Bartholomew, Hiller, Knight, Nucatola, & Simpson, 2000). Further, studies of ethnically diverse adult clients and their counselors working collaboratively using mapping provide evidence for their efficacy when compared to typical counseling methods (see Dansereau & Dees, 2002; Czuchry & Dansereau, 2000; 2003). The approach has been particularly helpful for clients with less education (Pitre, Dansereau, & Joe, 1996), for African Americans and Mexican Americans (Dansereau, Joe, Dees, & Simpson, 1996), for more difficult clients such as those with multiple drug use history and with attention problems (Czuchry, Dansereau, Dees, & Simpson, 1995; Dansereau, Joe, & Simpson, 1995; Joe, Dansereau, & Simpson, 1994), and is particularly effective for group counseling (Dansereau, Dees, Greener, & Simpson, 1995; Knight, Dansereau, Joe, & Simpson, 1994). This counseling aid is included in SAMHSA's National Registry of Evidence-based Programs and Practices (NREPP).

1.2. Hypotheses

Offenders who complete the during-prison *Waysafe* curriculum will report greater knowledge, self-confidence and motivation at post-test in the areas of teaching others like yourself about HIV/AIDS, managing risky sex and risky drug use, knowing what to do if exposed to HIV, and general life skills in planning their behavioral risk-reduction strategies for use during community re-entry compared to offenders in treatment as usual (TAU).

2. Methods

2.1. WaySafe Intervention

Each of the six *WaySafe* sessions are designed to last for about one hour and sessions are typically conducted weekly. Sessions are conducted with groups by a trained counselor and include a variety of group-based and participatory activities. *WaySafe* works best in closed group settings of between 10 and 20 participants as groups smaller than 8–10 participants do not often get the necessary level of interaction and groups larger than 20 become difficult to manage in the one-hour time span. Closed groups are recommended because each sequential session builds on previous sessions and due to the sensitive nature of some of the material, discussion can be inhibited when there are new group members every week. *WaySafe* is designed to be administered by counselors who are involved in the treatment program. *WaySafe* materials include an instructor's manual with directions for each of the six sessions, a participant self-paced workbook to be completed before each session, and handouts to be used during the sessions (including templates for different mapping exercises, game questions, answers and factoids, and vignettes).

Table 1 lists the six *WaySafe* sessions. Prior to each session, participants are given a workbook to complete that provides an introduction and exercises related to the upcoming session. The first participant workbook, preceeding the first group session, includes an overview of mapping including different types of maps and how they are used, and an exercise for them to create their own maps. The first group session, *Introduction to Mapping* gives an overview of *WaySafe* goals, an introduction to mapping as a communication tool, examples of different types of maps and how they might be used, and an exercise having participants working on group maps on topics related to relapse.

Session 2 covers *Risk and Reasons* which addresses reasons for risk taking. The participant workbook includes information about strong positive and negative feelings and how they impact decision making and asks participants to complete guide maps on reasons for taking risks, reasons for not taking risks, and identifying risks in a sexual situation they might encounter after they are released. The group session focuses on defining risks and risk-taking using a group-based free map to record participant's ideas, and then breaking into sub-groups to work on free maps around topics related to condom use such as reasons why people don't use condoms, why they should, and an advertisement map for condoms listing their selling points. These maps are then rotated between sub-groups to allow each group to add to each map.

Session 3 focuses on information about the transmittal and prevention of HIV. The participant workbook includes information and fact sheets about HIV and asks participants to complete a crossword puzzle and a guide map utilizing information from the fact sheets and then a free map to be shared with the larger group on helping to explain important things to remember about HIV and the best plan for avoiding infection. The group session centers around *The Game*, a team-based quiz game in which each of several teams must agree on a the best answer to a series of multiple choice questions about HIV. After the correct answer is revealed for each question, a factoid relating to the question is presented.

Session 4 centers on the *Should/Want Problem*, helping participants distinguish between what they might want to do versus what they should do. The participant workbook for this session includes guide maps asking participants to come up with situations in which “should” and “wants” might conflict and how to resolve those conflicts, things they should do in the future and “wants” that might interfere. A free map is also developed on how “wants” might get in the way of safe sex and how “should” thoughts might help them be smarter about taking risks. In the group session, a case study is presented about going to a party and being tempted by an old girl/boyfriend who has been with a lot of others. Some sub-groups are asked to produce maps on what they want to do and the other groups are asked to produce maps on what they should do. After the maps are completed, a “want” group and a “should” group are paired and asked to present their maps to each other “debate” style. A final free map is then created by the whole group that captures all of the “should” and “want” arguments.

The fifth session focuses on *Risk Scenes* which teaches the concepts of thinking about, planning, and rehearsing intentions regarding risk activities. The participant workbook introduces ways to help people avoid risks by linking good intentions to behavior with the help of beliefs, such as believing that their intentions are important and make sense, believing that their intentions fit their values, and believing that they are capable of carrying out their intentions. Two guide maps are included that ask participants to list a risky sexual or drug use situation and then list what they need to be prepared. A second map asks participants to list a risky situation and then list things they could say to talk their way out of the risky behavior. The group session focuses on TPR – Thinking, Planning, and Rehearsing – and the importance of practicing following through on intentions. Participants complete several guide maps during the session asking about their feelings in a scenario in which they have a baby that is HIV+ and describing a risk situation they may face in the future including listing options for keeping safe, possible roadblocks to their plans, planning ahead for the roadblocks and what they need to make sure they protect themselves.

The final session, *Planning for Risks*, reviews concepts covered in the first five sessions and reinforces planning tools to maintain a focus on safety. The participant workbook asks them to list choices they can make in regard to wanting to hook up with someone they didn’t really know and the positive and negative aspects of each choice. A second guide map asks what type of situation could make the choice difficult to carry out, how they would respond to the situation and how their common sense, values, beliefs, and strengths can help support positive intentions. The group session includes activities in which participants were asked to imagine themselves in the future having avoided HIV or Hep B and C and asking them what advice they would send to their “present” self to avoid infection.

2.2 Procedure

For the current study, counselors were trained in a two-day training session that included an introduction to TCU Mapping, introduction to the *WaySafe* materials and exercises, and data collection procedures for the research aspect of the project.

Offenders who were in the last phase of their prison-based substance abuse treatment and who had sufficient time left before release (from 2–3 months) to complete the study were

asked to attend an information meeting about the study. In these meetings, the study was described, the Informed Consent form was read aloud by a research staff member, and all participant questions were answered. Participants were then asked to sign the Informed Consent form if they were interested in participating in the study. Those that did not wish to participate were informed that they could either return their blank form or take it with them. Offenders were informed that they could rescind their consent to participate at any time without penalty. Informed Consent documents were approved by the Texas Christian University Institution Review Board (TCU IRB).

Each of the participating correctional facilities typically ran one or two *WaySafe* groups at a time and then formed a new group when a previous group had completed the curriculum. Regular treatment programming was typically conducted such that all offenders in a pod, cell block, wing, or floor attended groups together. Thus, random assignment generally involved assigning one of these groups to attend the six weekly *WaySafe* sessions or TAU in which they attended their regularly scheduled programming during the time that *WaySafe* groups were being conducted. Offenders randomly assigned to attend *WaySafe* also participated in regular programming outside of the time they were not attending the *WaySafe* sessions. All participating offenders were asked to complete a 92-item pre-test survey approximately one week prior to the beginning of *WaySafe* sessions and a post-test survey one week after the end of *WaySafe* sessions. Offenders were informed of their assignment to *WaySafe* or TAU by counselors after completing the pre-test.

WaySafe sessions were delivered by counselors on staff at each prison facility. Counselors were trained by research staff in a two-day training session on TCU Mapping Enhanced Counseling, delivering *WaySafe* using the counselor manuals, and research procedures and data collection. Two to three counselors and administrative staff were trained in each facility and additional staff were trained as needed. Counselors were asked to complete a checklist at the end of each session indicating which components for that session were completed. We were unable to obtain individual attendance data from counselors as this would have involved providing offender names. Participants assigned to *WaySafe* were free to discontinue their participation at any time although as a requirement of their incarceration, they were required to attend scheduled programming. Counselors reported very few dropouts from *WaySafe* during the six-week curriculum.

Treatment as usual in the eight facilities consisted of modified therapeutic community programming. Treatment vendors were contractually required to provide 20 hours of programming weekly and offenders were required to attend 20 hours of programming. Programming consisted of group and individual counseling and classroom activities. Basic HIV programming was included in the normal programming but typically in a didactic, lecture format covering basic HIV information. The *WaySafe* curriculum added to the normal treatment by focusing on decision making in an engaging and highly interactive group format

Of the 1,393 participants completing the pre-test, 736 were randomly assigned to the *WaySafe* condition and 657 to TAU. The somewhat larger *WaySafe* sample is due to the manner of randomly assigning groups rather than individuals. As shown below, *WaySafe*

and TAU did not differ significantly on demographic characteristics other than race and did not differ on pre-test measures. All participants who completed pre- and post-test surveys received a Certificate of Completion. The final analysis sample consisted of 1,257 participants who completed the pre-test and the post-test surveys; of these 653 were in the *WaySafe* condition and 604 in TAU. The number of participants in the analysis sample from each of the eight facilities ranged from 77 to 227. A Consort diagram is shown in Figure 1. It should be noted that many of the offenders who signed Informed Consent documents but were not included in the study did not have sufficient time before release to complete the study at the time new groups were formed.

2.3. Measures

Pre- and post-test surveys were developed to assess knowledge, confidence, and motivation around domains that the *WaySafe* curriculum addressed. Surveys are administered in group settings on scannable (Teleform) paper and pencil forms. Questions were written at the 5th grade level due to limited reading ability by some participants. Scales included HIV Knowledge, Avoiding Risky Sex, Avoiding Risky Drug Use, HIV Testing and Services, and Risk Reduction Skills. Within each of these five domains, items were constructed to assess the inmate's self-report of feeling knowledgeable about the domain, feeling confident in using that knowledge, and being motivated to act on that knowledge (only knowledge and motivation items were included for the HIV Testing and Services domain). Factor analyses of the items showed that the knowledge, confidence, and motivation items within each domain generally loaded together, so five scales were computed representing knowledge, confidence and motivation around each of the domains. Seven items with factor loadings below 0.40 were not included in any of the scales. Brief scale descriptions as well as pre-and post-test reliabilities are shown in Table 2.

The post-test measures were identical to the pre-test. Responses for all items were on a 5-point Likert scale with 1 = Disagree Strongly and 5 = Agree Strongly. Scale scores were computed by averaging the items within the scale and then multiplying by 10, resulting in a score range from 10 to 50. A scale score was computed if more than half of the items in the scale had valid scores. Of participants who completed both a pre- and post-test survey, missing data was present for only a single scale score. Scores above 30 indicated at least some agreement on average with the scale construct and scores below 30 indicated at least some disagreement on average with the scale construct.

The *HIV Knowledge Confidence and Motivation* scale included 13 items ($\alpha = .89$) such as "You know enough to teach others what they should do if they think they have been exposed to HIV," "You feel very confident that you could be a role model for others in helping reduce HIV risks," and "You are totally committed to helping your friends and/or family avoid HIV/AIDS."

Avoiding Risky Sex included 13 items ($\alpha = .91$) such as "During the past month, you have learned about what situations might lead you to make a poor decision about risky sex," "During the past month, your confidence in managing emotions in sexual situations in the real world has increased," and "During the past month, you have become more motivated to protect your sexual partner from HIV risk in the real world."

Avoiding Risky Drug Use included 12 items ($\alpha = .85$) such as “You have learned to think ahead in order to make less risky decisions about drug use,” “You are confident you will avoid HIV risk from drug use,” and “Even if it means reducing your enjoyment, you will always keep yourself from being exposed to HIV due to drug use.”

HIV Testing and Services included 7 items ($\alpha = .76$) such as “During the past month, you have become more knowledgeable about how to get HIV services in the real world” and “You will get tested for HIV if you think that you might have been exposed.”

Risk Reduction Skills included 14 items ($\alpha = .85$) such as “During the past month, you have a better understanding of how your shoulds and wants can conflict in the real world,” “During the past month, you have become more confident in balancing your shoulds and wants in the real world,” and “During the past month, your motivation to avoid personal HIV risks in the real world has increased.”

2.4. Sample

The sample included 1,393 inmates in the last phase of treatment in eight different prison-based, substance abuse therapeutic community treatment programs in two different states. All participating offenders signed Informed Consent documents approved by the Texas Christian University (TCU) IRB. The eight participating facilities included three women’s facilities (including one special needs program) and five men’s facilities.

Sample demographics are shown in Table 3. Overall, 52% of participants were white, 23% African American and 20% Hispanic; 56% were male, 61% had a High School diploma. Almost half were single (46%), 23% were married and 31% divorced. Average age was 34 with a range of 18 to 67. *WaySafe* and TAU participants differed significantly on race but not on the other demographic variables. *WaySafe* participants were more likely to be African American (27% vs. 19% for TAU) and TAU participants were more likely to be white (54% to 50%). There were no significant differences on background problems between the *WaySafe* and TAU groups in the six months before entering the current facility or on index variables for injection risk, sex risk, and concerns about AIDS in the 30 days before entering prison. Overall, 50% of the sample reported they were employed full-time, 28% were unemployed and not looking for work, 26% were on public financial support, 69% on parole or probation, 25% had been treated in an emergency room, 20% had been treated for a mental health problem, 10% had been treated for an alcohol use problem, 22% for illegal drug use, and 62% had been arrested and 67% had been in jail or prison prior to their current situation.

2.5. Analytical approach

Analyses comparing *WaySafe* and TAU on pre-test and post-test scores used SAS Proc Mixed (to account for nesting within the eight institutions). Analyses comparing *WaySafe* and TAU groups on post-test scores used pre-test scores for the appropriate scales as covariates. Effect sizes (Cohen’s d ; Cohen, 1988) were computed as the mean difference between the *WaySafe* and TAU means divided by the pooled standard deviation. We also computed paired t-tests within the *WaySafe* and TAU groups on each of the five scales to

examine pre-post change and computed effect sizes for change within each group. Difference scores (post-test minus pre-test) were compared between the conditions using SAS Proc Mixed to assess differential change. Additional analyses using SAS Proc GLM were conducted as above on pre-test and post-test scores within each of the eight facilities. Participants with missing data on a particular scale were not included in the analyses for that measure.

Because the TAU and *WaySafe* groups differed significantly on the proportion of African Americans, we also ran the analyses on pre-test and post-test comparisons with a dummy code for African American as a covariate. This covariate did not change any of the results. However, the background form that included race was completed when offenders entered prison and was only available on 1,091 of the 1,257 participants in the analyses. Thus, we are presenting the results for the larger sample that did not include African American as a covariate.

3. Results

3.1. Post-test completers vs. non-completers

Of the 1,393 participants who completed the pre-test survey, 136 did not complete the post-test survey. A comparison of these 136 with the analysis sample of 1,257 participants who completed both pre-test and post-test surveys on demographic variables and the five pre-test scales indicated that participants who did not complete a post-test were more likely than those who did to be male (67% of post-test non-completers vs. 56% of completers), more likely to be single (58% vs. 46%) but less likely to be divorced or separated (17% vs. 31%), were younger (mean age of 31.8 vs. 34.3), and were more likely to be on parole or probation in the six months prior to entering the present facility (79% to 69%). Post-test non-completers also had slightly higher scores at pre-test than did completers on HIV Services and Testing (least squares means of 43.3 vs. 42.1) and Risk Reduction Skills (42.5 vs. 41.6).

In order to determine whether the non-completers biased the overall results, we compared the analysis sample of post-test completers and compared the *WaySafe* and TAU groups on the variables in which the completers and non-completers differed (gender, age, marital status, and being on parole/probation in the last six months prior to incarceration). There were no significant differences between the two groups. Because the non-completers did not have any outcome data, we were not able to conduct intent-to-treat analyses, so we utilized these variables as covariates (along with a dummy code for African American) in the pre- and post-test analyses and the results, similar to those described below, showed that the *WaySafe* and TAU groups did not differ on any of the five pre-test measures and did differ significantly on the five post-test measures (while also controlling for the pre-test score). Because these covariates did not change the overall results, we chose to report the analyses below on the larger sample of participants with pre- and post-test scores without the covariates since the covariates were available for only 1,091 of the 1,257 participants with post-test scores.

3.2. Pre-test comparisons

Scores on the five pre-test scales for *WaySafe* and TAU participants are shown in Table 4. There were no significant differences at pre-test between the two groups. Effect sizes of the group differences were small, ranging in absolute value from .005 to .023.

3.3. Post-test comparisons

Table 5 shows the means scores on the five post-test scales for the *WaySafe* and TAU groups. As shown, the *WaySafe* participants had a higher mean score on all five scales at post-test than did TAU participants, with $p < .001$ for each scale. Effect sizes were .424 for HIV Knowledge Confidence, .416 for Avoiding Risky Sex, .270 for Avoiding Risky Drug Use, .346 for HIV Services and Testing, and .381 for Risk Reduction Skills. Although not shown in Table 5, there were significant pre-test to post-test increases on all five scales for both the TAU and *WaySafe* groups, although there were larger changes for the *WaySafe* group on each scale. For the TAU group, post-test/pre-test differences ranged from 1.3 to 2.6 on the five scales, with effect sizes for the difference ranging from .232 to .352. For the *WaySafe* group, difference scores ranged from 2.7 to 5.3 for the five scales and effect sizes for the difference ranged from .491 to .795.

3.4. Facility-level comparisons

WaySafe and TAU groups also were compared on the pre-test and post-test scales separately for each of the eight participating facilities. Analyses were similar to those described above except that SAS Proc GLM was used rather than Proc Mixed because analyses were conducted within each of the nesting units. TAU and *WaySafe* groups were first compared on pre-test scores, and then on post-test scores controlling for the pre-test score. For the pre-test comparisons, the TAU group had a higher score on Avoiding Risky Drug Use in one facility (43.0 vs. 41.1) and for HIV Knowledge Confidence in a second facility (43.1 vs. 40.7). At post-test, the *WaySafe* group had significantly higher post-test scores than did the TAU group on all five scales in four of the facilities, had significantly higher scores than did the TAU group on three of the five scales in three facilities, and higher scores on two of the five scales in one facility. The TAU group did not have significantly higher post-test scores on any scale in any of the eight facilities.

4. Discussion

A curriculum to improve decision-making regarding disease risk behaviors for incarcerated drug abusers undergoing substance abuse treatment was developed and successfully implemented in eight different prisons in two different states. The curriculum utilized evidence-based Mapping-Enhanced Counseling strategies designed to help offenders make better decisions regarding health risk behaviors when they are released from incarceration back into the community. This transitional period is one of high risk as offenders are faced with a variety of stresses they may not be prepared to adequately handle, such as the temptations for having risky sex and using drugs.

Addressing the risks for HIV and other infectious diseases should be included in substance abuse treatment programs, especially prison-based programs. While basic information about

HIV and how it is spread often is included as part of prevention efforts, rarely do such programs go beyond basic education on HIV to identifying and planning for risks and temptations for HIV or HCV. *WaySafe* was developed to help offenders make better decisions regarding these risks when they return to the community. *WaySafe* uses group-level discussions and activities to help offenders identify risks and risky situations, identify the consequences of different decisions, deal with differences in what they might want to do and what they should do, and help them develop plans for dealing with risks when they encounter them. *WaySafe* presents these lessons using mapping enhanced counseling strategies that assist participants in discussing concepts related to risks and decision-making and consequences and the inter-relationships among those constructs. And as discussed above, mapping strategies are effective for increasing client motivation, engagement, and participation and helps facilitate communication, memory, and problem-solving during sessions. Mapping works well in group sessions by encouraging each member of the group to contribute to group maps.

The six-session *WaySafe* curriculum was successfully implemented in a diverse set of eight different prison-based substance abuse treatment programs in two different states. These eight facilities differed by gender (three were all female and five were all male), target population (one facility was a special needs program), length of program (from 6 month to 24 month programs), and treatment vendor. Results in this study demonstrated that participants who attended *WaySafe* sessions had better attitudes at post-test regarding their knowledge, confidence, and motivation around HIV knowledge, avoiding risky sex and risky drug use, risk reduction skills, and their knowledge and motivation regarding HIV testing services. For example, *WaySafe* participants were more likely than offenders who received TAU to report that they know enough to teach others about how to avoid getting HIV from sexual activities, that they feel more confident in talking to a sexual partner about HIV risks, and that they are more motivated to talk to others about their HIV risks. *WaySafe* participants were more likely to report that they had learned that it may be necessary to reduce their enjoyment in order to avoid risky sex, that their confidence in managing emotions in sexual situations had increased, and that they had become more motivated to protect their sexual partner from HIV risks.

Analyses at the facility level also supported the effectiveness of *WaySafe* at improving knowledge, motivation, and confidence around HIV, avoiding risky behaviors, and risk reduction skills. There were significant differences between *WaySafe* and TAU participants on all five scales in four and significant differences in the other four facilities but not for all of the scales. It is not clear what might have accounted for the facility-level differences but even so, positive results were found in all of the facilities in which *WaySafe* was implemented demonstrating its robustness in different contexts. Given the large differences in sample size for the different facilities, we examined whether these differences might be a function of statistical power but observed that the facilities with the larger sample sizes tended to be those that did not have statistical differences on all five of the scales. Several factors might have contributed to greater success at some facilities than others. Counselor competence or other characteristics (e.g., a charismatic counselor might have been more successful delivering *WaySafe*), general stability of the programs at the facilities in terms of

staff or counselor turnover may have had some impact. Sessions were sometimes delayed or postponed due to lockdowns for various reasons. However, even though.

4.1. Limitations

Limitations of this study should be noted. First, the post-test scores are attitudinal and do not measure what respondents will do once they are released back into the community. However, the theory of reasoned action postulates that intentions are the best predictor of behavior and improvements in knowledge, confidence and motivation for making better decisions about risks should be precursors to less risky behaviors in the community. However, there are many complex factors that contribute to changes in risk behaviors so the relationship between changes in intentions and changes in actual risk behaviors after release from prison is not clear. Another limitation is that the curriculum occurred at the end of substance abuse treatment after offenders had received at least some required HIV programming, which typically is didactic lectures presenting information on HIV. Even at pre-test, scores on the five *WaySafe* scales were relatively high leaving less room for improvement for offenders completing the *WaySafe* curriculum. Even so, significant improvements were found on all scales and in all of the eight facilities. A third limitation is that the curriculum was implemented in only two different states in prison-based substance abuse treatment facilities. Results could be different in other regions of the country where prison policies may be different.

4.2. Conclusions and future research

Overall, the results of this study demonstrated the effectiveness of the *WaySafe* curriculum in a variety of prison-based substance abuse treatment programs to improve decision-making regarding HIV risk behaviors in terms of improving knowledge, confidence and motivation for avoiding risks. Future research should follow participants into the community to assess whether these changes are sustainable in the community and the extent to which they are related to reduced risk behaviors. Finding new methods to reinforce the lessons learned in the community is a critical next step because these changes in attitudes and intentions will degrade over time especially with the stress and pressures of transitioning from prison back into the community and reinforcing lessons learned while offenders are currently facing risky situations may be helpful. And future research needs to examine how programs are able to implement and utilize *WaySafe*. Although it is designed as a six-session package, programs frequently do not have the resources – time, space, staffing – to fully implement all sessions. For example, treatment providers often are limited by contract in terms of how many hours of programming are available and the curriculums they are allowed to use. Research on how *WaySafe* is implemented, as a whole package or pieces, and how it is incorporated into existing programming is important.

Acknowledgements

Funding for this study was provided by the National Institute on Drug Abuse, National Institutes of Health (NIDA/NIH) through a grant to Texas Christian University (R01DA025885; Wayne E.K. Lehman, Principal Investigator). Interpretations and conclusions in this paper are entirely those of the authors and do not necessarily reflect the position of NIDA/NIH or the Department of Health and Human Services. This protocol has been registered in clinicaltrials.gov (NCT01900210).

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Highlights

- An interactive curriculum, *WaySafe*, was developed to improve decision-making around health risk behaviors for incarcerated offenders in their last phase of substance abuse treatment.
- The curriculum was administered to over 600 offenders in 8 facilities in 2 different states.
- Compared to offenders receiving treatment as usual, those who participated in *WaySafe* reported higher post-test knowledge, confidence, and motivation around avoiding risky behaviors.
- Positive results were also shown in each of the 8 facilities that differed by gender, length of stay and treatment vendor demonstrating robustness of the curriculum.

Figure 1.
Consort Diagram.

Table 1*WaySafe Sessions*

	Description
1. Introduction to Mapping	Some background about node-link mapping, a thinking and problem solving tool that helps you explore your beliefs and decisions.
2. Risks and Reasons	Here you find some opportunities to think about why people take risks and examine your own beliefs about risk-taking.
3. The Game	Knowing stuff is important for survival. This workbook helps you review what you know and what you don't know about HIV and other illnesses.
4. The Should/Want Problem	It is human to WANT things. There is also a voice that reminds you what you SHOULD do. How do these voices influence your decisions?
5. Risk Scenes	Everyone intends to avoid risks. When it comes to avoiding HIV, turning intentions into actions requires thinking ahead about risky situations.
6. Planning for Risks	Most people do not do a very good job planning for how they will deal with risks in life. You should learn how to think ahead and enjoy the benefits.

Table 2*WaySafe* Pre- and Post-test Measures

Scale Name	Items	<u>Chronbach's alpha</u>		Description
		Pre-test	Post-test	
HIV Knowledge Confidence	13	.89	.94	Knowledge about avoiding HIV and confidence and motivation to talk with others about avoiding HIV
Avoiding Risky Sex	13	.91	.93	Knowledge about risky sex and confidence and motivation to avoid risky sex activities
Avoiding Risky Drug Use	12	.85	.88	Knowledge about risky drug use and confidence and motivation to avoid risky drug use activities
HIV Services and Testing	7	.76	.83	Knowledge about getting tested for HIV and obtaining HIV services and motivation to get tested regularly
Risk Reduction Skills	14	.85	.90	Having skills for preventing HIV and having the confidence and motivation to use those skills

Table 3

Sample Characteristics

	TAU	WaySafe	Total	p
Race				.018
White	54%	50%	52%	
African-American	19%	27%	23%	
Hispanic	21%	19%	20%	
Other	6%	4%	5%	
Gender				.370
Male	57%	55%	56%	
Female	43%	45%	44%	
H.S. diploma, GED or higher	61%	61%	61%	.980
Mean Age (s.d.)	34.3 (9.5)	34.3 (9.5)	34.3 (9.5)	.935
Marital Status				.171
Single	43%	48%	46%	
Married	23%	23%	23%	
Divorced/separated	34%	29%	31%	
In the 6 months before entering this program or being "locked up," were you ever (% yes)--				
employed full time?	51%	49%	50%	.465
unemployed and NOT looking for work?	27%	29%	28%	.527
receiving any public assistance?	26%	27%	26%	.770
on parole or probation?	68%	69%	69%	.880
treated in an emergency room?	25%	26%	25%	.749
treated for a mental health problem?	18%	22%	20%	.167
treated for an alcohol use problem?	10%	11%	10%	.651
treated for illegal drug use?	22%	23%	22%	.667
arrested?	63%	61%	62%	.529
in jail or prison?	66%	69%	67%	.334
HIV Risks/Concerns				
Needle Risk Index --Mean (s.d.)	1.21 (0.62)	1.24 (0.68)	1.22 (0.65)	.453
Sex Risk Index --Mean (s.d.)	1.45 (0.59)	1.48 (0.63)	1.47 (0.61)	.315
Concern about AIDS --Mean (s.d.)	2.90 (1.02)	2.85 (1.00)	2.88 (1.01)	.467

Table 4

Pre- test Scores for *WaySafe* measures

	TAU (N = 604)		<i>WaySafe</i> (N = 653)		t	prob	Cohen's d
	M	s.d.	M	s.d.			
HIV Knowledge Confidence	39.8	6.2	39.5	6.2	1.01	0.311	−0.023
Avoiding Risky Sex	38.5	7.3	38.9	6.9	−0.84	0.399	0.014
Avoiding Risky Drug Use	43.1	5.5	43.0	5.4	0.14	0.891	−0.005
HIV Services and Testing	42.3	5.6	42.7	5.7	−0.99	0.323	0.016
Risk Reduction Skills	41.7	4.9	42.0	4.8	−1.00	0.317	0.023

Table 5Post- test Scores for *WaySafe* measures (with corresponding pretest as covariate)

	TAU (N = 604)		WaySafe (N = 653)		t	prob	Cohen's	
	M	s.d.	M	s.d.			d	
HIV Knowledge Confidence	41.8	6.2	44.5	5.1	-10.59	<.001	0.424	
Avoiding Risky Sex	41.1	6.8	44.2	5.1	-10.67	<.001	0.416	
Avoiding Risky Drug Use	44.3	5.0	45.7	4.6	-5.99	<.001	0.270	
HIV Services and Testing	43.7	5.5	46.3	4.5	-10.36	<.001	0.346	
Risk Reduction Skills	43.2	5.0	45.4	4.2	-9.17	<.001	0.381	