

# Trauma-Informed HIV Prevention and Treatment

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**Abstract** The high prevalence of trauma and its negative impact on health and health-promoting behaviors underscore the need for multi-level interventions to address trauma and its associated sequelae to improve physical and mental well-being in both HIV-infected and HIV-uninfected populations. Growing global awareness of the intersection of trauma and HIV has resulted in development and testing of interventions to address trauma in the context of HIV treatment and HIV prevention in the USA and globally. Despite increasing recognition of the widespread nature of trauma and the importance of trauma to HIV transmission around the globe, several gaps remain. Through a survey of the literature, we identified eight studies (published in the past 5 years) describing interventions to address the effects of trauma on HIV-related outcomes. In particular, this study focused on the levels of intervention, populations the interventions were designed to benefit, and types of trauma addressed in the interventions in the context of both HIV prevention and treatment. Remarkably absent from the HIV prevention, interventions reviewed were interventions designed to address violence experienced by men or transgender individuals, in the USA or globally. Given the pervasive nature of trauma experienced generally, but especially among individuals at heightened risk for HIV,

future HIV prevention interventions universally should consider becoming trauma-informed. Widespread acknowledgement of the pervasive impact of gender-based violence on HIV outcomes among women has led to multiple calls for trauma-informed care (TIC) approaches to improve the effectiveness of HIV services for HIV-infected women. TIC approaches may be relevant for and should also be tested among men and all groups with high co-occurring epidemics of HIV and trauma (e.g., men who have sex with men (MSM), transgendered populations, injection drug users, sex workers), regardless of type of trauma experience.

**Keywords** Trauma · HIV prevention · HIV care · Interventions · Trauma-informed care

## Introduction

Histories of trauma, defined by the Substance Abuse and Mental Health Services Administration (SAMHSA) as events or circumstances “experienced by an individual as physically or emotionally harmful or life-threatening and that [which have] lasting adverse effects on the individual’s functioning and mental, physical, social, emotional, or spiritual well-being” [1], are common among HIV-infected individuals. In resource-rich settings like the United States (U.S.), childhood physical and/or sexual abuse before age 13 is experienced by 30 % of HIV-infected individuals, and intimate partner violence (IPV) is experienced by 68–95 % of HIV-infected women, 68–77 % of men, and 93 % of transgender people [2–5]. Among HIV-infected individuals, experiences of trauma are associated with poor mental health, increased engagement in HIV high-risk transmission behaviors (i.e., substance abuse, high-risk sexual activity), diminished adherence to HIV care

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and antiretroviral therapy, more frequent opportunistic infections, and higher risk of AIDS-related mortality [6, 7].

Among the general population, it is estimated that 51–81 % of adults in high-income countries have experienced at least one traumatic event (such as a life-threatening assault or accident, human-caused or natural disaster, violent death of loved one, or war) at some point in their lives, with many people experiencing multiple traumas [8–10]. Estimates from low- and middle-income countries of general trauma exposure are less frequently reported but are typically in line with those reported by high-income countries (e.g., 76 % of adults in Mexico experience at least one traumatic event) [11]. Traumatic experiences in post-conflict, low-income countries can oftentimes be even higher. For example, 92 % of adults in Algeria have experienced at least one traumatic event [12]. Many trauma survivors experience lasting psychosocial impairment, including posttraumatic stress disorder (PTSD); panic, phobic, or generalized anxiety disorders; depression; and increases in alcohol or substance abuse and an increased likelihood of engaging in risky sex (e.g., non-condom use, multiple sex partners) [13, 14, 15]. Factors associated with heightened risk for HIV, such as poverty, race/ethnicity, sexual orientation, and gender, may increase the risk of exposure to potentially traumatic events, thereby compounding their HIV risk [16–18].

The high prevalence of trauma and its negative impact on health and health-promoting behaviors among HIV-infected and high-risk HIV-uninfected populations underscore the need for interventions to address trauma and its associated sequelae in order to improve physical and mental well-being and bolster HIV prevention and treatment efforts in these populations. Fortunately, growing global awareness of the intersection of trauma and HIV has resulted in development and testing of interventions to address trauma in the context of HIV treatment, and several recent reviews have highlighted this work [16, 19]. Most recently, Seedat [16] reviewed interventions to improve psychological functioning and health outcomes of HIV-infected individuals with a history of trauma and found 15 intervention studies published in the 2 years prior. These studies employed various intervention methods (e.g., individual therapy, group therapy, prolonged exposure therapy) and had varying degrees of efficacy across trauma and HIV-related outcomes. However, they were all focused on intervening at the individual level and were almost exclusively conducted in the USA. Intervention studies among HIV-uninfected individuals have also received attention. Among the trauma-informed HIV primary prevention intervention literature, two recent reviews of interventions in sub-Saharan Africa have nicely summarized this body of intervention research [20, 21]. Combined, they reported on the efficacy of over a dozen prevention interventions addressing the intersection of violence and HIV, predominately focused on youth and women in sub-Saharan Africa, with studies employing various intervention

approaches including community-wide, school-based, and individual-level behavioral strategies to address violence and decrease HIV sexual risk behaviors. Notable limitations of the literature on HIV-uninfected populations, however, are the narrow scope of trauma addressed in these programs (e.g., most concentrate on intimate partner violence (IPV)), the nearly exclusive focus on trauma or violence experienced by or directed toward women, as well as the absence of interventions addressing the intersection of trauma and HIV prevention conducted in the USA.

In sum, despite increasing recognition of the widespread nature of trauma as an epidemic in the USA and globally, several gaps remain. Specifically, what is less clear is: (1) the degree to which interventions (published in the past 5 years) to address trauma exist in the context of HIV prevention and treatment, and (2) if interventions to address trauma in the context of both HIV prevention and treatment are focused on intervening at multiple levels of the social ecological model (e.g., individual, interpersonal, community, policy). Also, given the diversity of individuals with high levels of trauma exposure (e.g., minority youth, MSM, transgender people, minority men and women, sex workers, and injection drug users (IDUs)) and the variation in trauma experiences (e.g., childhood sexual abuse, physical abuse, community violence, IPV; if the trauma was acute versus chronic; poly-victimization, complex trauma), gaps also exist in understanding (3) who trauma-informed interventions are designed for/delivered to, and (4) types of trauma they are intended to address. We will summarize the recent literature on trauma-informed HIV treatment and prevention interventions to address these four identified knowledge gaps.

## Methods

Through a survey of the literature, we sought to identify recent studies describing the results of interventions designed to reduce HIV risk or improve sexual health outcomes by addressing abuse or trauma in the intervention. In other words, the intervention had to include content specifically designed to address abuse or trauma experienced by the target population. We conducted our literature search using PubMed with the following search term combinations: “HIV, abuse, intervention” and “HIV, trauma, intervention.” Both searches were conducted in July, 2016, and were limited to articles published within the past 5 years (July 2011 through July 2016). The “HIV, abuse, intervention” search yielded 1026 initial results, and the “HIV, trauma, intervention” search yielded 125 initial results. We included studies which met the following additional eligibility criteria: (1) the study that detailed an intervention (exclusion of cross-sectional analyses and review articles); (2) the intervention content that specifically addressed childhood sexual abuse, intimate

partner violence, or other forms of physical, sexual, or emotional abuse or experienced trauma/violence; and (3) the intervention that measured HIV prevention and/or treatment outcomes. We also reviewed the references of included articles to identify additional eligible articles.

## Results

Our search yielded eight interventions meeting our eligibility criteria. Six interventions were identified by the “HIV, abuse, intervention” search, and two were identified through reviewing the references of these articles. The “HIV, trauma, intervention” search yielded no new additional interventions. The eight studies are described in detail in Table 1. Of the eight interventions addressing abuse/trauma experiences in the context of HIV intervention programming published in the past 5 years, the majority ( $n = 5$ ) were conducted outside of the USA, specifically in Uganda, India, and South Africa. Only one intervention was designed to address abuse/trauma experiences of individuals living with HIV [22], while the remaining focused on primary HIV prevention. Three of the interventions were implemented at the community level [23–25], one was implemented at the interpersonal level [26], and the remainder were implemented at the individual level. In regard to populations served by the interventions, three interventions targeted women exclusively, with one specifically focusing on adolescent women [27–29]. One targeted African-American men who have sex with men and women (MSMW) [22], and one was specifically designed for sex workers [24]. In terms of the type of abuse or trauma addressed by these recently published interventions, the vast majority included content to explicitly address IPV ( $n = 5$ ; see Table 1). One intervention specifically addressed experiences and sequelae of childhood sexual abuse [22], one addressed physical and sexual abuse more generally [27], and one addressed multiple forms of violence, including IPV, police violence, and violence related to sex trafficking [24].

The eight interventions included in this review represent a diverse range of intervention designs and intended outcomes. Herein, we briefly describe the study design of each intervention included in the review, with additional details about the study and key findings of each intervention presented in Table 1.

The Abramsky et al. [23] *SASA!* intervention utilized a cluster-randomized design, in which four matched pairs of community sites were identified for implementation. The intervention focuses on facilitating conversations about power and inequality and both the benefits and consequences of power. *SASA!* was broken into four phases: Start, Awareness, Support, and Action, and engaged community activists and institutional staff in its implementation. Overall, the intervention sought to affect social acceptance of IPV and

gender inequality and decrease sexual risk behaviors among community members. Participants completed a baseline assessment, experienced the equivalent of 2.8 years of *SASA!* initiatives, and completed follow-up assessments 4 years after the baseline assessment.

The Champion and Collins [27] *Project IMAGE* intervention implemented a randomized controlled trial among Mexican and African-American adolescent women aged 14–18 years who had a history of abuse and STIs and were seeking sexual health care. The intervention aimed to reduce STIs among participants. The intervention arm included two workshops on basic sexual risk behavior reduction, 2 individual counseling sessions, and 3–5 support group sessions focusing on sexual risk behavior, treatment compliance, genitourinary symptomatology, health-seeking behavior, HIV/STI, interpersonal relationships, contraceptive use, pregnancy, and substance use and abuse. The control group participants received the intervention at study completion. All participants completed pre- and post-tests, received clinical counseling at each visit, and completed a follow-up physical exam.

The Peragallo et al. [28] *SEPA* intervention was a randomized controlled experimental study based on the social-cognitive model that was conducted among Hispanic women between 18 and 50 years old. Intervention participants completed five, 2-h sessions in small groups—conducted in English or Spanish depending on the group’s needs—that addressed HIV/AIDS in the Hispanic community, STIs, HIV/AIDSs prevention, partner negotiation and communication, IPV, and substance abuse. These sessions utilized role play, group participation, videos, and group discussions. Participants were also offered HIV-related booster sessions and completed 6- and 12-month follow-up assessments. At the 6-month follow-up, participants were given the opportunity to attend a booster intervention session.

Reza-Paul et al. [24] implemented a 4-stage, community-led, structural intervention that aimed to reduce violence and STI/HIV transmission among sex workers. The four stages of the intervention were engagement (3–6 months), which focused on outreach, condom use, identity, crisis response, and safe spaces, involvement (1–2 years), which focused on HIV/STIs, violence, common identity, workplace security, and enabling environments, ownership (1–2 years), which focused on broader health and social issues, collective action, rapid response teams, and domestic safety, and sustaining (ongoing), which focused on action beyond the community, broader social engagement, and community acceptance as protection. A community-based monitoring system was developed to measure STIs, HIV, and violence in the community.

The Wagman et al. [25] *SHARE* intervention was conducted among clusters selected from a past cluster-randomized trial and aimed to reduce IPV and HIV incidence among participants. The intervention was conducted

**Table 1** Summary of findings: trauma-informed HIV prevention and treatment intervention studies between June 2011 and June 2016

Authors (year)	Country	Treatment/prevention	Population	Trauma addressed	Intervention level	Targeted outcome(s)	Intervention efficacy
Abramsky T, Devries K, Kiss L, Nakuti J, Kyegombe N, Staarmann E, Cundill B, Francisco L, Kaye D, Musuya T, Michau L, Watts C (2014) [23]	Uganda	Primary prevention	18- to 49-year-old community members	IPV	Community	<ul style="list-style-type: none"> <li>•Reduce social acceptance of IPV and gender inequality</li> <li>•Decrease experiences of IPV</li> <li>•Improve community response to experiences of IPV</li> <li>•Decrease sexual risk behaviors</li> </ul>	<ul style="list-style-type: none"> <li>•Lowered social acceptance of IPV</li> <li>•Increased acceptance that women can refuse sex</li> <li>•Lowered past year experience of sexual and physical IPV</li> <li>•Increased community support among women experiencing IPV</li> <li>•Reduced past year sexual concurrency among men</li> <li>•Reduced STIs at 6 and 12 months post-intervention</li> </ul>
Champion JD, Collins JL (2011) [27]	USA	Primary prevention	Mexican- and African-American adolescent females with STI and abuse histories	Physical or sexual abuse	Individual	<ul style="list-style-type: none"> <li>•Reduce STI rates</li> </ul>	<ul style="list-style-type: none"> <li>•Reduced past year sexual concurrency among men</li> <li>•Reduced STIs at 6 and 12 months post-intervention</li> </ul>
Peragallo N, Gonzalez-Guarda RM, McCabe BE, Cianelli R (2011) [28]	USA	Primary prevention	Hispanic female adults	IPV	Individual	<ul style="list-style-type: none"> <li>•Reduce chlamydia rates</li> <li>•Reduce behavioral risks (e.g., sexual risk, intimate partner risk, substance use)</li> <li>•Improve prevention mediators</li> <li>•Reduce multiple forms of violence</li> <li>•Prevent STIs/HIV</li> </ul>	<ul style="list-style-type: none"> <li>•Decreased chlamydia rates</li> <li>•Increased condom use</li> <li>•Decreased substance use</li> <li>•Decreased IPV</li> <li>•Improved several prevention mediators (e.g., communication)</li> <li>•Decreased incidence of violence (police, anti-social elements, clients)</li> <li>•Saw increases in reported IPV</li> </ul>
Reza-Paul S, Lorrow R, O'Brien N, Lazarus L, Jain J, Bhagya M, Fathima MP, Venukumar KT, Raviprakash KN, Baer J, Steen R (2012) [24]	India	Primary prevention	Male and female sex workers	Multiple forms, including IPV, violence from clients, police and other community members, and trafficking	Community		
Wagman JA, Gray RH, Campbell JC, Thoma M, Ndyanabo A, Ssekasanvu J, Nalugoda F, Kaganyi J, Nakigozi G, Serwadda D, Brahmbhatt H (2015) [25]	Uganda	Primary prevention	15–49 year-old community members	IPV	Community: individual level for women only	<ul style="list-style-type: none"> <li>•Reduce experience and perpetration of past year IPV (emotional, sexual, physical)</li> <li>•Reduce lab-diagnosed HIV incidence</li> </ul>	<ul style="list-style-type: none"> <li>•Reduced past year experience of physical and sexual IPV</li> <li>•Reduced HIV incidence at ~35-month follow-up</li> </ul>
Wechsberg WM, El-Bassel N, Carney T, Browne FA, Myers B, Zule WA (2015) [26]	South Africa	Primary prevention	Heterosexual adult couples with alcohol using male in primary partner relationship	IPV	Interpersonal/couple	<ul style="list-style-type: none"> <li>•Reduce alcohol and other drug use</li> <li>•Reduce sexual risk behaviors</li> <li>•Reduce IPV</li> <li>•Promote healthy relationships</li> <li>•Modify traditional gender roles</li> <li>•Increase biologically confirmed drug abstinence</li> </ul>	<ul style="list-style-type: none"> <li>•No findings to date; intervention underway</li> </ul>
Wechsberg WM, Jewkes R, Novak SP, Kline T, Myers	South Africa	Primary prevention		IPV	Individual		

**Table 1** (continued)

Authors (year)	Country	Treatment/prevention	Population	Trauma addressed	Intervention level	Targeted outcome(s)	Intervention efficacy
B, Browne FA, Carney T, Lopez AAM, Parry C (2013) [29]			Sexually active, drug-using women between 18 and 33 years of age			<ul style="list-style-type: none"> <li>•Increased likelihood of being sober at last sex</li> <li>•Increase condom use with main and casual sex partners</li> <li>•Reduce IPV</li> <li>•Reduce sexual risk behaviors</li> <li>•Reduce number of partners;</li> <li>•Reduce psychological symptoms;</li> <li>•Improve HIV symptoms using neurohormone indicators (cortisol) and neopterin as an indicator of HIV progression</li> </ul>	<ul style="list-style-type: none"> <li>•Increased abstinence from drugs at 12-month follow-up</li> <li>•Increased likelihood of being sober at last sex at 6-month follow-up</li> <li>•Reduced episodes of unprotected anal insertive sex</li> <li>•Reduced depressive symptoms</li> </ul>
Williams JK, Glover DA, Wyatt GE, Kisler K, Liu H, Zhang M (2013) [22]	USA	Treatment; secondary prevention	HIV+ African-American MSMW with history of CSA	Childhood sexual abuse	Individual		

over 4 years, with 1 year for each phase: raising awareness, building networks, integrating action, and consolidating efforts. Participants had to be 15–49 years old and, as part of the intervention, received HIV testing, were provided with pre-test and post-test counseling, and received referral for care and treatment if needed. Intervention group participants also completed SHARE violence-reduction intervention activities, which are based on the stages of change theory and aimed to reduce IPV and risk behavior among women seeking HIV counseling and testing. Assessments were conducted at baseline, 16, and 35 months.

The Wechsberg et al. [26] *Couples' Health CoOp* intervention has not yet been implemented. However, it is a couple-based intervention for men who use alcohol and other drugs and their primary female sexual partners. The program will be comprised of two workshops, each broken into two modules, and seeks to reduce alcohol and other drug use, sexual risk behavior, and IPV, promote healthy relationships, and modify traditional gender roles. The intervention was designed by using the ADAP framework to modify existing HIV prevention interventions, conducting focus groups with men, women, and couples, and piloting the intervention.

The Wechsberg et al. [29] *WHC* intervention was a randomized trial comprised of two peer-facilitated sessions, each broken into two 2-h modules that addressed knowledge and skills to reduce drug use, sex risk, and violence among drug-using women aged 18–33 years old. The first session disseminates information about drug use, HIV, and their risks, as well as sexual negotiation skills regarding condom use. The second session highlights relationship power, communication, negotiation skills, and avoiding sexual violence. At the end, risk-reduction plans were developed for each participant, addressing alcohol and drug use, condom use, and violence. The control group participated in a nutrition intervention. Participants were assessed at baseline, 3, 6, 9, and 12 months.

Lastly, the Williams et al. [22] *ES-HIM* intervention was a 4-year study conducted among HIV-positive African-American MSMW who were at least 18 years of age. Participants completed a baseline questionnaire and attended six 2-h small group sessions over 3 weeks. Participants completed 3- and 6-month post-tests to assess sexual risk reduction, psychological indicators, and HIV progression. The intervention program focused on changing sexual behavior and improving psychological health and touched upon concepts such as membership in a triple minority group, stigma, social isolation, sexual ownership, and caring for sexual partners, family, and community. The program took trauma histories into strong consideration and addressed cognitive distortions, negative thoughts, and negative emotions by teaching participants to identify stress triggers and understand the negative impacts these triggers can have.



## Discussion

The impact of trauma on mental health, sexual risk behavior, and HIV outcomes has been well described [13•, 16, 30•]. Trauma is highly prevalent among individuals infected with and at high risk for HIV. The aim of this study was to survey and describe recent research conducted in the USA as well as globally on interventions to address the effects of trauma on HIV-related outcomes. In particular, this study focused on the levels of intervention, populations the interventions were designed to benefit, and types of trauma addressed in the interventions in the context of both HIV prevention and treatment. The findings from this study can be used to guide future research and strategies to prevent HIV acquisition and improve outcomes among HIV-infected individuals who have experienced trauma.

We found that most interventions (seven of the eight reviewed) were designed to address trauma in order to enhance HIV prevention efforts, with all five non-U.S. studies included in this review focusing on trauma in the context of primary HIV prevention. For decades, violence has been acknowledged globally as a significant barrier for HIV prevention, especially among girls and women and marginalized individuals such as sex workers. Many African countries, for instance, have acknowledged and attempted to address the co-occurring epidemics of gender-based violence and HIV and have been global leaders in this respect as nicely summarized by Anderson et al. [21•] and Harrison et al. [20] in separate reviews. For instance, the Harrison et al. review reported on the efficacy of eight HIV prevention interventions among youth in sub-Saharan Africa and highlighted interventions using strategies targeting different levels of the socioecologic model to address violence and decrease HIV sexual risk behaviors, such as IMAGE, a structural intervention focused on economic empowerment [31], loveLife, a school-based life skills program [32], and Stepping Stones, a community participatory HIV prevention approach [33]. In the Anderson et al. review of a small number of randomized trials of individual-level behavioral interventions to address HIV and IPV in sub-Saharan Africa, the authors concluded that gender-based and empowerment theory-driven interventions may significantly reduce HIV sexual risk behaviors among women with IPV histories, but these were mainly temporary (6 months or less) improvements in reported behaviors or behavioral intentions [21•]. Specifically, among female sex workers, Wechsberg's intervention resulted in increased condom use at 1-month follow-up, [34] and Sikkema et al. [35] reported enhanced risk reduction intentions post-HIV intervention among women (mean age 36 years.) seeking IPV services from a community-based NGO in Johannesburg. Importantly, *none* demonstrated efficacy in reducing HIV incidence among women generally, or adolescent women (15–24 years) specifically, a key population for current HIV

prevention efforts, particularly in sub-Saharan Africa. As is evident from our findings from this survey of recently published trauma-informed HIV prevention interventions, trauma-informed HIV prevention, especially in high-burden HIV settings outside of the U.S., continues to be a key intervention focus.

To expand on the findings from Harrison et al. [20] and Anderson [21•], it is notable that four of the five non-U.S. studies in this survey focused efforts on preventing violence and improving healthy intimate partner relationships in attempt to impact HIV prevention outcomes rather than on altering sexual risk behaviors and addressing sequelae of violence among individuals who have already experienced abuse. In accordance with this shift in prevention focus (from HIV to violence prevention), three identified studies employed community-level intervention strategies focused on preventing violence, and one concentrated on the interpersonal level by including couples in the intervention to achieve their goals. Targeting the social determinants of HIV, in this case primary prevention of gender-based violence, was indeed effective, as one community-level violence prevention intervention observed a significant decrease in HIV incidence.[25] Two U.S.-based individual-level interventions also addressed violence prevention, but as a secondary strategy among those who had already experienced violence [27, 28]. Both of these behavioral interventions to reduce sexual risk behaviors and STIs among young women with abuse histories successfully incorporated content about intimate partner violence and managing healthy relationships into their HIV risk reduction interventions.

Although the trauma-informed HIV prevention studies reviewed were largely successful in achieving their intended outcomes (see Table 1), several key gaps remain. Remarkably absent from the HIV prevention, interventions reviewed were interventions designed to address violence experienced by men or transgender individuals, in the USA or globally. Also, with the exception of the intervention work among sex workers in India, the HIV prevention and HIV treatment interventions were predominately focused on intimate partner violence or childhood abuse and did not address other traumatic experiences or multiple traumas. Specific to studies conducted in the USA, we did not identify any interventions that specifically addressed trauma manifesting from the community level, sometimes referred to as “collective trauma,” which affect *groups* of people such as neighborhood violence or violence based on gender, race, religion, or sexual identity or orientation, nor did we identify U.S.-based trauma-informed HIV prevention interventions designed to prevent violence at the interpersonal or community level as an intentional means to prevent HIV.

Given the pervasive nature of trauma experienced generally, but especially among individuals at heightened risk for HIV, future HIV prevention interventions universally should

consider becoming trauma-informed. In other words, trauma-informed HIV prevention would incorporate intentional efforts to acknowledge and address trauma, in its many manifestations not just interpersonal violence, and its mental and physical health sequelae, as well as the intersection of trauma and HIV as part of the intervention. Further, acknowledging and addressing trauma manifesting from the community level (e.g., neighborhood violence or violence based on race or sexual identity or orientation) through community-directed interventions to reduce violence could be particularly potent in the context of U.S.-based HIV prevention efforts as demonstrated by successful community-level interventions outside of the USA.

Among HIV-infected individuals, although prior reviews have documented numerous interventions designed to address trauma experiences and the sequelae of trauma to improve HIV treatment outcomes [16, 19], only one trauma-focused intervention for HIV-infected individuals was identified, and it was conducted in the USA using a group-based intervention approach to address childhood sexual abuse [22]. Thus, a striking finding from this survey of the literature is the absence of trauma-informed HIV treatment interventions implemented outside of the USA.

Widespread acknowledgement of the pervasive impact of trauma on HIV outcomes, particularly among women and girls, has led to multiple calls for trauma-informed care (TIC) approaches to improve the effectiveness of HIV services [13, 36, 37–39]. According to the SAMHSA, “TIC is a strengths-based service delivery approach that is grounded in an understanding of and responsiveness to the impact of trauma, that emphasizes physical, psychological, and emotional safety for both providers and survivors, and that creates opportunities for survivors to rebuild a sense of control and empowerment” [40]. TIC is an organizational culture and universal precautions approach distinct from individual-level trauma-specific interventions or treatments. Trauma-informed systems and programs: “1) *Realize* the widespread impact of trauma and understands potential paths for recovery; 2) *Recognize* the signs and symptoms of trauma in clients, families, staff, and others involved with the system; 3) *Respond* by fully integrating knowledge about trauma into policies, procedures, and practices; and 4) *Seeks* to actively resist *re-traumatization*” [41]. Evidence from mental health, substance use, and social service settings show that TIC enhances the effectiveness of evidence-based health services, improves patient outcomes, increases staff morale, and is cost-effective [42–44]. However, to date, the efficacy of TIC to improve HIV outcomes has not been well established.

Calls for a TIC approach to improve HIV programs and services have focused exclusively on models of care for women and girls and have primarily focused on trauma due to childhood abuse and intimate partner violence and HIV care and treatment outcomes (e.g., antiretroviral drug adherence).

We agree that TIC is a promising approach for improving the uptake, adherence to, and effectiveness of HIV services among women and girls who have experienced childhood abuse or relationship violence. However, given the state of the evidence as described in this study, high levels of multiple types of traumatic experiences among individuals infected with and at risk for HIV, and an urgent need to meet the HIV service needs of individuals with trauma histories, we propose that TIC approaches may be relevant for and should be tested among men and all groups with high co-occurring epidemics of HIV and trauma (e.g., men who have sex with men (MSM), transgendered populations, IDUs, sex workers), regardless of type of trauma experience.

The magnitude of the prevalence of trauma among populations such as low-income minority women, MSM, and IDUs suggests the need for community-, structural-, or organizational-level interventions to mitigate the impact of trauma on HIV outcomes. There is promising research and programming in this area [23]. For example, emerging evidence suggests that interventions and programs that build social ties within communities and promote cultural strengths, restorative justice, and resiliency may help address collective trauma leading to improved health outcomes [45]. Collective trauma is also a concept that is highly relevant in global contexts, particularly in post-war countries or among communities of people displaced from their homes due to violence and unrest. In addition, efforts to update medical school curricula and to train clinicians on taking comprehensive, culturally responsive sexual histories could be helpful to ensure individuals with histories of trauma are identified and offered appropriate referrals.

We recommend that the TIC model should be extended to high-risk HIV-negative populations, as well. Promising efforts in this area include work on TIC approaches to school-based sexual education and tools and strategies for integrating a TIC approach into teen pregnancy prevention programs [46–48]. Situating trauma-informed sexual health services (e.g., sexual education, HIV testing, HIV prevention programs) within settings which particularly serve adolescents with trauma histories (e.g., juvenile justice settings, foster care services, agencies serving homeless youth) may be an effective strategy for addressing trauma and preventing HIV among individuals at high risk for infection.

We believe that TIC is consistent with an overall sexual health framework, which aims to promote health and healthy sexual development by taking into consideration the complex factors that shape sexual behavior and influence utilization and adherence to care and services. As efforts continue to prevent and reduce morbidity and mortality due to HIV and more practitioners orient toward the goal of sexual health, addressing trauma remains a clear factor for further innovation and intervention. In particular, research to test the efficacy of TIC to improve various HIV outcomes, along a continuum

from primary prevention to viral suppression, among multiple populations with multiple types of trauma experiences is needed.

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#### Compliance with Ethical Standards

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