Published in final edited form as:

J Assoc Nurses AIDS Care. 2015 ; 26(2): 127–138. doi:10.1016/j.jana.2014.11.001.

Future directions for interventions targeting PTSD in HIV-infected adults

Allison J. Applebaum, PhD,

Assistant Attending Psychologist, Department of Psychiatry and Behavioral Sciences, Memorial Sloan-Kettering Cancer Center, New York, New York, USA

C. Andres Bedoya, PhD,

Instructor in Psychology, Department of Psychiatry, Massachusetts General Hospital and Harvard Medical School, Boston, Massachusetts, USA

Ellen S. Hendriksen, PhD,

Clinical Assistant Professor, Department of Psychiatry and Behavioral Sciences, Stanford University School of Medicine, Stanford, California, USA

Jesse L. Wilkinson, BS,

Graduate student in the Department of Clinical Psychology, State University of New York at Stony Brook, Stony Brook, New York, USA

Steven A. Safren, PhD, ABPP, and

Professor of Psychology, Department of Psychiatry, Massachusetts General Hospital and Harvard Medical School, Boston, Massachusetts, USA

Conall O'Cleirigh, PhD

Assistant Professor of Psychology, Department of Psychiatry, Massachusetts General Hospital and Harvard Medical School, Boston, Massachusetts, USA

Abstract

Although studies consistently report high rates of comorbid Post Traumatic Stress Disorder (PTSD) and HIV infection, development and testing of PTSD treatment interventions in HIV-infected adults is limited. As such, the purpose of this review was twofold. First, this review augments the 3 existing reviews of research for PTSD in HIV-infected adults conducted within the past 10 years. We found 2 empirically supported cognitive-behavioral therapy (CBT)-based interventions for the treatment of trauma-related symptoms in HIV-infected adults. Due to the

© 2014 Association of Nurses in AIDS Care. All rights reserved.

Corresponding Author: Allison J Applebaum, Department of Psychiatry and Behavioral Sciences, Memorial Sloan-Kettering Cancer Center, 641 Lexington Avenue, 7th Floor, New York, N.Y., 10022. applebaa@mskcc.org.

Disclosures

The authors report no real or perceived vested interests that relate to this article that could be construed as a conflict of interest.

The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

continued limited number of effective interventions for this population, a second aim of our review was to draw from the expansive field of effective PTSD interventions for the general population to propose ways that future clinical intervention research may be tailored for HIV-infected adults. Therefore, in addition to a review, we conceptualized this paper as an opportunity to generate an ideal preview of the field of intervention research in this population.

Keywords

HIV; intervention development; post traumatic stress disorder (PTSD); research recommendations

Post traumatic stress disorder (PTSD) is a mental health condition that results from exposure to a traumatic event that involves actual or threatened death, serious injury, or sexual violence through directly experiencing the traumatic event, witnessing the event as it occurs to others, learning that the event occurred to a close family member or friend, or experiencing repeated or extreme exposure to aversive details of the traumatic event (American Psychiatric Association, 2013). The person's response to the event involves intense fear, helplessness, or horror, and the event is persistently re-experienced, stimuli associated with the event are avoided, and the person experiences persistent symptoms of increased arousal. In addition, symptoms must persist for more than a month and cause clinically significant distress or impairment in functioning. The likelihood of developing PTSD may vary based on the history of the trauma experience, such as the number, type, and severity of traumatic events (e.g., Cloitre et al., 2009). Although these symptoms are typically a normal response to trauma that in the majority of people naturally resolve over time, the recovery process may be hindered by consistent avoidance and engaging in safety behaviors (Abramowitz, Deacon, & Whiteside, 2010).

The prevalence of PTSD in HIV-infected adults is higher than in the general population (Sherr et al., 2011), ranging from approximately 10% to 74% (Beckerman & Auerbach, 2010; Tsao, Dobalian, Moreau, & Dobalian, 2004), as opposed to 8% in the general population (American Psychiatric Association, 2013). HIV-infected adults as a group are likely to have experienced traumatic events that place them at risk of developing PTSD. For example, Leserman et al. (2005) found that more than half of a large cohort of HIV-infected adults reported a history of either sexual or physical abuse. Moreover, more than 70% of the sample had experienced at least two lifetime traumas. Among HIV-infected women, research has consistently demonstrated that PTSD is over-represented and may be more common than depression, suicidality, alcohol abuse, and drug abuse (Golding, 1999), which is potentially related to increased exposure to traumatic experiences such as physical violence and sexual assault, including intimate partner violence and childhood sexual abuse (CSA; Cavanaugh, Hansen, & Sullivan, 2010; Martinez, Israelski, Walker, & Koopman, 2002; Olley, Zeier, Seedat, & Stein, 2005). HIV-infected men who have sex with men (MSM) represent an additional population where PTSD is over-represented. In MSM, the most common trauma studied is CSA (Lenderking et al., 1997), and there is evidence that MSM with a history of CSA are more likely to be at risk for re-victimization through adult sexual assault (Heidt, Marx, & Gold, 2005). Among the many factors that contribute to HIV-infected vulnerability to PTSD, HIV-related stigma stands out as a key catalyst and

precursor to interpersonal violence and trauma associated with PTSD (e.g., Breet, Kagee, & Seedat, 2014).

Additionally, the trauma associated with receiving a diagnosis of HIV may increase the risk of developing PTSD more so than for other medical diagnoses (Brief et al., 2004; Gore-Felton & DiMarco, 2007; Theuninck, Lake, & Gibson, 2010). Studies have found rates of HIV-related PTSD ranging from approximately 15% to 64% (Olley et al., 2005; Safren, Gershuny, & Hendriksen, 2003), with up to one third of HIV-infected individuals attributing the onset of PTSD specifically to their HIV diagnosis (Olley et al., 2005). No study, however, has attributed PTSD exclusively to HIV diagnosis; development of PTSD is rather believed to occur among those with a trauma history (Sherr et al., 2011). From this perspective, prior trauma or history of PTSD may increase vulnerability to a posttraumatic response to an HIV diagnosis (Nightingale, Sher, Mattson, Thilges, & Hansen, 2011; O'Cleirigh, Ironson, & Smits, 2007).

Among HIV-infected adults, however, there is a paucity of research examining the efficacy of evidence-based interventions for the treatment of PTSD, despite consistently high rates of comorbid PTSD and HIV-infection. The co-occurrence of these disorders creates multiple challenges for both the management of HIV and the treatment of PTSD, including more rapid disease progression and poorer survival (Ironson et al., 2005; Leserman et al., 2005), poorer health-related quality of life (Leserman et al., 2005), and poorer health behaviors, such as substance use, high-risk sexual behavior, poor utilization of services, and low adherence to antiretroviral therapy (ART; Boarts, Buckley-Fischer, Armelie, Bogart, & Delahanty, 2009; Brief et al., 2004).

Three reviews conducted in the past decade highlight the need for an expansion of interventions to treat PTSD in HIV-infected adults. First, as part of their examination of the co-occurrence of HIV, PTSD, and substance use disorders, Brief et al. (2004) reviewed the literature to identify potentially effective psychological treatments for HIV-infected individuals with PTSD or PTSD/substance use disorders. In discussing the efficacy of PTSD treatment in HIV-uninfected trauma survivors, the authors noted that, as of 2004, "whether it is possible to achieve similar treatment outcomes in individuals living with a chronic, life-threatening disease such as HIV remains to be determined" (Brief et al., 2004, p. S106). In other words, the review yielded no evidence-based PTSD interventions with HIV-infected people. Despite this, the review made suggestions for future directions, including interventions that addressed ART adherence in HIV-infected adults with trauma histories (e.g., Antoni et al., 1991) and coping effectiveness training (e.g., Chesney, Folkman, & Chambers, 1996), as well as interventions that attended to both trauma-related symptoms and substance use disorder behaviors (seeking safety [Najavits, 2002]; concurrent treatment of PTSD and cocaine dependence [Brady, Dansky, Back, Foa, & Carroll, 2001]).

Next, Sherr et al. (2011) conducted a systematic review of studies that examined PTSD and post-traumatic growth. Sherr et al. (2011) found that, since the review by Brief et al. (2004), three randomized controlled trials (RCTs) had addressed trauma symptomatology in HIV-infected adults (Koopman et al., 2002; Sikkema et al., 2007; Sikkema et al., 2004). The authors concluded that additional evaluation of such interventions was needed; however,

detailed recommendations for research and treatment development were missing from their review.

Finally, Seedat (2012) conducted a review of interventions (2010–2012) for HIV-infected adults with a history of trauma or PTSD. The author highlighted two RCTs, including the first to evaluate the efficacy of prolonged exposure for PTSD in HIV-infected adults (Pacella et al., 2012) and a group-based coping intervention for HIV-infected adults with a history of CSA (Sikkema et al., 2007). Despite the recent growth in the number of studies, Seedat (2012) concluded, “To date, the evidence-base supporting the effectiveness of different types of interventions for the improvement of psychiatric and psychological outcomes in trauma-exposed, infected individuals is small” (p. 346).

The body of research for PTSD in HIV-infected adults continues to develop and the need for investigations of intervention development remains urgent. Therefore, we conceptualized this article as an opportunity to generate an ideal preview of the field of intervention research in this population, in addition to a review of the literature. The Seedat (2012) review examined interventions from 2010 to 2012; we aimed to examine a more targeted scope of intervention research and to focus specifically on the gold standard of intervention research—the RTC. The goals of our review were to: (a) examine the current research literature and review the efficacy of recent randomized, controlled interventions for treating PTSD in HIV-infected adults, (b) draw from the expansive field of effective PTSD interventions for the general population to tailor for HIV-infected adults, and (c) propose rigorous standards and specific recommendations for future intervention research.

Method

The criteria for selection of efficacy trials were as follows: (a) the treatment was evaluated as part of an RTC, (b) PTSD diagnosis or PTSD symptom severity was assessed as a primary study outcome, (c) study entry criteria was selected for HIV-infected patients with PTSD, and (d) the treatment was theory-based and linked to a hypothesis of the causative and maintaining variables of the disorder.

Pub Med and Psych Lit data bases were searched using each of the following terms in conjunction with *HIV* (Title/Abstract) OR *AIDS* (Title/Abstract) AND *Posttraumatic stress disorder* (Title/Abstract) OR *PTSD* (Title/Abstract) OR *trauma* (Title/Abstract) OR *trauma treatment* (Title/Abstract) OR *traumatic stress* (Title/Abstract) OR *traumatized* (Title/Abstract) OR *childhood sexual abuse* (Title/Abstract) OR *intimate partner violence* (Title/Abstract) OR *major life stress* (Title/Abstract) AND *efficacy* (Title/Abstract) OR *effectiveness* (Title/Abstract) OR *clinical trial* (Title/Abstract) OR *intervention* (Title/Abstract) AND 1995/01/01 (PDAT): 2013/07/20 (PDAT). Reference sections of the selected articles were then searched to identify other published studies not identified in the previous search that met the entry criteria. A total of 199 articles were returned in the search. Of the articles returned, 2 articles met all entry criteria. Of the 197 articles that did not meet all entry criteria, 167 were excluded because they did not involve a mental health intervention, 28 were excluded because they did not assess changes in trauma symptoms or PTSD

symptoms as an outcome, and 2 were excluded because they did not include participants who were HIV infected.

Results

Two RCTs based on cognitive-behavioral therapy (CBT) techniques demonstrated the efficacy of prolonged exposure (PE; Pacella et al., 2012) and a coping intervention in mitigating patient-reported posttraumatic stress symptoms (Sikkema et al., 2007) in HIV-infected adults. Posttraumatic stress symptoms refer to trauma-related symptoms (i.e., hyper-vigilance, re-experiencing) that are the result of a trauma. Self-reported symptoms, however, are not sufficient to determine whether diagnostic criteria are met for PTSD. A diagnosis should be established through a thorough clinical assessment and based on trained clinical judgment (American Psychiatric Association, 2013), but self-report measures, interpreted within the context of a clinical interview, may be useful tools for screening and monitoring treatment responses over time (Resick, Monson, & Rizvi, 2008). It is notable that our review yielded no RCTs that specifically targeted HIV-infected adults with clinician-diagnosed PTSD—the gold standard for establishing a diagnosis of PTSD (Resick et al., 2008).

Pacella et al. (2012) conducted a small, two-arm RCT assessing the efficacy of PE (vs. a weekly monitoring control group) to reduce trauma-related symptoms, depression, negative posttraumatic cognitions, and substance use in HIV-infected adults who, according to the self-reported PTSD Diagnostic Scale (PDS; Chilcoat & Breslau, 1998) were likely to meet clinical diagnostic criteria for PTSD based on self-report of symptoms. Participants included 65 men and women, of whom 45% were African American, 29% White, 6% Hispanic, and 7% identified as more than one race. Eighty-five percent of the sample earned less than \$20,000 (USD) annually and had lived with HIV for 13 years on average. The PE intervention was conducted individually with a clinical psychology postdoctoral fellow who had received extensive training in conducting PE therapy and followed a standard PE protocol of 10 sessions conducted twice per week for 5 weeks. Sessions lasted 90 to 120 minutes and included psycho-education about common reactions to trauma memories, prolonged exposure to trauma memories, repeated in-vivo exposure to situations the patient was avoiding due to trauma-related fear, and discussion of thoughts and feelings related to exposure exercises. The participant selected the traumatic experience, either HIV- or non-HIV related, that would be the focus of PE treatment; 34% of the sample reported HIV diagnosis as their most distressing trauma. Retention varied by randomization arm, with a 32% attrition rate in the PE arm as compared to 0% in the control arm. Participants who received PE reported significantly fewer trauma-related symptoms and improved negative posttraumatic cognitions; they were also more likely to achieve good end-state functioning (defined by the authors as a composite score based on self-reported HIV-related and non-HIV-related posttraumatic stress symptoms and depression), than those randomized to a weekly monitoring control group. The gains in the PE arm were maintained at 6-month follow-up.

Sikkema et al. (2007) conducted a 15-session, three-arm RCT of a CBT-based coping skills and stress management group intervention for the treatment of trauma-related symptoms

(i.e., intrusions, avoidance) in HIV-infected men and women with a history of CSA (Masten, Kochman, Hansen, & Sikkema, 2007; Puffer, Kochman, Hansen, & Sikkema, 2011). Although a diagnosis of PTSD was not required for participation, 40% of the sample was believed to have likely met a PTSD diagnosis based on self-reported symptoms. Participants included 253 adults, of whom 91 were male and, although the study attempted to recruit heterosexual participants, all men identified as MSM. Demographically, 68% were African American, 16% Hispanic, 11% White, and 4% identified as other. Additionally, 92% of the sample earned less than \$20,000 (USD) annually and had lived with HIV for 10 years on average. The intervention was based on an integration of the cognitive theory of stress and coping that utilized CBT strategies for sexual trauma, within a transactional framework for understanding sexual abuse outcomes. Central features of the intervention included exposure, problem solving, communication skills, cognitive restructuring, relaxation techniques, skills building, and fostering a safe environment within the group. The intervention consisted of 15 weekly 90-minute group sessions led by experienced therapists (discipline unspecified). Participants identified stressors they believed to be related to their experiences with CSA and HIV diagnosis, parallels between the experiences were drawn, and then exposure and skills-building exercises were used to facilitate adaptive coping to these traumas. The comparison group, however, focused on providing a supportive therapeutic setting to talk about HIV and trauma. Attrition rates from each of the two conditions were not significantly different. Results, based on comparing the impact of the CBT-based intervention to supportive therapy and a waitlist control, found that the CBT-based coping skills group intervention was associated with significantly greater and clinically significant reductions of intrusive and avoidance trauma-related symptoms compared to the supportive therapy and waitlist conditions. No differences were found between waitlist and supportive therapy conditions. Those who received the coping skills intervention reported greater reductions in avoidant coping than did those who received the supportive intervention, with coping skill impact fully mediated by changes in avoidant coping (Sikkema et al., 2013). Participants in the coping skills group, in comparison to the support group, also reported significantly less alcohol use and cocaine use at follow-up (Meade et al., 2010).

Discussion

Our systematic review of interventions targeting PTSD in HIV-infected adults revealed a limited number of empirically supported treatments for PTSD in this population. The review provided evidence for the efficacy of two CBT-based interventions—prolonged exposure (PE) and a coping skills and stress management intervention—for the treatment of trauma-related symptoms in HIV-infected adults.

Ten years after Brief et al. (2004) called for intervention research for HIV and PTSD, limited empirical evidence continues. Yet continuing high rates of comorbid PTSD and HIV-infection have indicated a significant need to establish the empirical basis for treatment. To this end, we begin by discussing how current empirically-supported PTSD interventions may be applied with HIV-infected adults and then discuss the implications for research, challenging researchers to aim for rigorous standards as the field evolves.

Tailoring Effective Treatments for PTSD in HIV-Infected Adults

The efficacy of interventions to treat PTSD in the general population is well established. A large body of evidence supports the use of cognitive behavioral interventions for the treatment of PTSD (Ursano, 2000). As outlined in the practice guidelines of the International Society for Traumatic Stress Studies (Foa, Keane, Friedman, & Cohen, 2009), CBT for PTSD includes eight different potential approaches to treatment, including: PE, systematic desensitization, stress inoculation training, cognitive processing therapy (CPT), cognitive therapy, assertiveness training, biofeedback, relaxation training, and any number of a combination of these. PE and CPT have demonstrated particular efficacy in the treatment of PTSD. This family of approaches has been used to good effect for PTSD, and may be readily applied to HIV-infected adults.

Multidimensional CBT approaches—The success of the intervention by Sikkema et al. (2007), described at length above, to reduce intrusive and avoidant traumatic stress symptoms among HIV-infected adults with a history of trauma attested to the benefits of multidimensional CBT approaches for the treatment of traumatic stress symptoms in HIV-infected people who faced three layers of trauma—childhood abuse, homophobic oppression, and HIV (Masten et al., 2007). In light of the high rate of re-victimization among HIV-infected adults with CSA, the complexity of traumatic stress symptoms, and the cumulative nature of childhood violence, CBT interventions that attend to the cognitive and emotional sequelae of repeated traumatization are likely best suited to address traumatic stress symptoms in these individuals.

Prolonged exposure (PE)—The practice guidelines of the International Society for Traumatic Stress Studies (Foa et al., 2009) suggested that PE may be the most effective form of treatment for PTSD. PE has demonstrated particular efficacy for women with PTSD (Foa, 1995), a group that is overrepresented among HIV-infected adults, and therefore may be an especially appropriate approach for this population. Pacella et al. (2012) was the first to use PE for PTSD in HIV-infected adults, and further applications should be considered. Future research should also investigate the impact of tailoring for trauma type (i.e., CSA vs. intimate partner violence vs. HIV diagnosis as the primary trauma).

CBT for substance abuse—CBT has also demonstrated particular efficacy in the treatment of substance use disorders (Magill & Ray, 2009; McHugh, Hearon, & Otto, 2010), and concurrent treatment of substance abuse within PTSD may decrease the risk of relapse (e.g., Antoni et al., 2000). CBT may be particularly appropriate for the treatment of PTSD in HIV-infected adults due to the high comorbidity between PTSD and substance use disorders in this population. In addition, substance use disorders may result from maladaptive coping or attempts to avoid symptoms connected to, and/or serve as the precursor to, traumatic experiences, making CBT an attractive option (Dutra et al., 2008). Substances of abuse also serve as powerful reinforcers of behavior and, hence, one of the core elements of CBT for substance use is exposure to internal and external cues (i.e., drug paraphernalia, cravings, thoughts such as “I can’t handle feeling so badly, I need to use”) to drug use and restructuring maladaptive cognitions related to such cues.

Cognitive processing therapy (CPT)—Of note, there were no studies that specifically examined the use of CPT, an adaptation of CBT, to target PTSD or traumatic stress symptoms in HIV-infected adults. This was surprising in light of the large body of evidence for the efficacy of CPT for the treatment of PTSD in the general population. CPT includes cognitive restructuring, written essays to support exposure and processing, and psychoeducation. These procedures are designed to impact the symptoms of PTSD through emotional processing of the trauma memory by way of repeated exposure and changes in the meaning of the event (Keane & Barlow, 2004; Resick, 2001). CPT targets these mechanisms through a combination of exposure therapy and cognitive restructuring/processing, and skill development (Resick, Nishith, Weaver, Astin, & Feuer, 2002). While some of these elements (i.e., exposure and processing of trauma-related material) were touched upon in the interventions of Sikkema et al. (2007) and Pacella et al. (2012) reviewed here, future studies are needed to examine the specific application of this empirically supported intervention for HIV-infected adults.

Written emotional disclosure—A large body of literature has found that expressing emotions associated with stressful experiences, either verbally or in written form, leads to improved physical and psychological health (Park & Blumberg, 2002; Pennebaker, Mayne, & Francis, 1997). Repetitive written emotional exposure is effective in treating the severity of PTSD symptomatology and avoidance of stimuli associated with the trauma (Bernard, Jackson, & Jones, 2006; Sloan, Marx, & Epstein, 2005), which is consistent with the principles of exposure-based treatments. Studies of both HIV-infected and uninfected adults have found significant relationships between emotional/cognitive processing of trauma through written essays, and physical and psychological health benefits (O’Cleirigh, Ironson, Fletcher, & Schneiderman, 2008; Petrie, Fontanilla, Thomas, Booth, & Pennebaker, 2004).

Cognitive behavioral stress management (CBSM)—Given the Sikkema et al. (2007) findings with a coping and stress management intervention, CBSM stands out as potentially beneficial for the treatment of posttraumatic stress symptoms within the context of HIV. CBSM is a manualized intervention designed to augment individual abilities to adapt to stressful situations, such as being diagnosed with HIV. CBSM combines training in cognitive behavioral strategies, adaptive coping, interpersonal skills, and relaxation techniques, as well as application of these both within session and through homework (Carrico et al., 2006).

Although CBSM was not developed specifically for the treatment of PTSD, the large body of intervention research attests to the broader health benefits for people managing HIV and suggests fertile ground for augmenting traditional PTSD treatments in ways that increase their acceptability and relevance. Stress management interventions have been shown to impact multiple outcomes relevant for people living with HIV (PLWH; O’Cleirigh, Hart, & James, 2008; O’Cleirigh & Safren, 2008). We support recommendations to expand traditional stress management interventions in HIV to accommodate these patients (O’Cleirigh, Hart, et al., 2008; Scott-Sheldon, Kalichman, Carey, & Fielder, 2008). Indeed, there is a rich body of research that suggests that CBSM techniques may serve as a

beneficial supplement to evidenced-based interventions for PTSD for those infected with HIV (Antoni et al., 2000).

Implications for Research

Diagnostic assessment in clinical research and treatment development—While the effectiveness of interventions for the treatment of PTSD in HIV-uninfected samples has been well established, limited data are available for HIV-infected adults. To our knowledge, no studies have examined the impact of these interventions on clinician-measured (the gold standard) diagnosis of PTSD in HIV-infected adults, nor has the clinical impact of symptom clusters (i.e., dissociative subtype) been discussed. In the studies reviewed here (Pacella et al., 2012; Sikkema et al., 2007), a clinical diagnosis of PTSD was not required for study entry and sample sizes were small and limited in the types of trauma addressed. While these studies provide preliminary evidence for the benefits of PE and coping-focused interventions for posttraumatic stress symptoms, the ability of these interventions to cause (a) clinically significant change among HIV-infected adults with diagnostic levels of PTSD or (b) clinically significant improvement of distress or impairment within specific symptom clusters, is not yet established. In light of the high rates of clinician-diagnosed PTSD among HIV-infected adults and the significant negative toll PTSD takes on health-related behaviors, adherence to HIV medical treatment, and immune function (Leserman et al., 2005), there is a great need for treatments that are effective to treat diagnostic levels of PTSD and for treatments that result in full-remission of PTSD as confirmed by clinician-based assessment. As such, future research is needed to include clinician-administered interviews of PTSD (e.g., Clinician Administered Post-traumatic Stress Scale for DSM-IV [Blake et al., 1995]; Structured Clinical Interview for DSM-IV [Spitzer & Williams, 1988]) that have been validated for use with people infected with HIV. The inclusion of structured interviews, in addition to self-report measures of post-traumatic stress symptoms, will increase the relevance of study findings to the entire continuum of posttraumatic stress reactions, from elevated distress to true diagnostic cases of PTSD.

Broad inclusion criteria to facilitate generalizability—With PTSD, comorbid psychopathology is the rule rather than the exception (Brady, Killeen, Brewerton, & Lucerini, 2000). Indeed, the majority of PLWH diagnosed with PTSD also meet diagnostic criteria for one or more additional psychiatric disorders (Brief et al., 2004; Whetten, Whetten, Ostermann, & Itemba, 2008). For example, a regional survey found that among HIV-infected individuals who met criteria for an anxiety disorder such as PTSD, 62% also met criteria for a mood or substance use disorder (Gaynes, Pence, Eron, & Miller, 2008). The high occurrence of comorbidity may be due to the significant symptom overlap between PTSD, other anxiety disorders, and depression, as well as the common sequelae of substance use disorders.

To this end, Rounsaville, Carroll, and Onken (2001) suggested several strategies that could expedite the process of maximizing scale-up of clinical research. Ensuring broad inclusion and few exclusion criteria would allow researchers to develop interventions that target PTSD in a truly real-world context. Unlike traditional efficacy trials in which patients would be selected with a clean diagnostic profile (i.e., only PTSD), broader inclusion criteria will

help to ensure that patients who have comorbid health, mental health (e.g., depression, other anxiety disorders), and substance use issues would be well represented in samples in which these developing interventions are tested. This would also help to ensure that PTSD treatments for people managing HIV would be efficacy-tested in real-world contexts and that these programs would be more effective, acceptable, and, ultimately, sustainable. Efficacy testing in the realistic context may also involve implementation by a range of practitioners working in community settings, rather than highly trained and specialized clinicians in exclusively research settings. This could be particularly relevant as HIV becomes more associated with poverty, as we will need to establish realistic and functional treatment modalities that can be delivered in communities with limited resources.

Finally, given the level of comorbidity in this population, traditional control conditions may not be appropriate (e.g., no treatment or waitlist control conditions). Comparative trials may be better placed to offer all study participants some form of care or treatment. Broader treatment models that incorporate referral for services, linkage to care, or even a platform of case management services within the context of the study design, might help to accommodate efficacy testing within the ethical constraints of working with a highly comorbid, and often underserved, patient group.

Examination of socio-cultural context—Further study is also needed across subgroups of factors that increase vulnerability to and provide protection from developing PTSD, as well as consider the differential effects of gender, socioeconomic status, sexual orientation, and socio-cultural context. There is also great need for research that provides a better understanding of PTSD within HIV-infected minority groups—those with the highest reported rates of trauma and PTSD (Centers for Disease Control and Prevention, 2013). More information is needed on how chronic stressors (e.g., discrimination, stigma, poverty) mediate the impact of traumatic events within HIV-infected racial and ethnic minorities. Research could focus on addressing factors that have been found to exacerbate PTSD symptom severity within HIV-infected minorities, such as impaired attention and decision-making (Koblin et al., 2006), use of high-risk health behaviors for coping (Gore-Felton & DiMarco, 2007), abusive relationships (Galvan et al., 2004), and increased emergency room visits (Leserman et al., 2005). Further understanding is especially needed for the low rates of mental health utilization in HIV-infected minority groups (Martinez et al., 2002).

Inclusion of qualitative research methods—Clinical research seeking to develop effective interventions should also incorporate qualitative research procedures. Masten et al. (2007) provided an excellent example in their presentation of the group model used in the Sikkema et al. (2007) CBT-based coping skills and stress management intervention. However, a variety of analytical methods, including grounded theory, content analysis, and ethnography from a variety of sources—in-depth interviews or essays—should be used to gain a rich, ground-up view of the lived experience of PTSD in the context of HIV.

Recent work has accomplished this in diverse ways. For example, Machtinger et al. (2014), used qualitative methods to conduct a post-intervention examination of an expressive therapy group intervention for women living with HIV; Kremer and Ironson (2014) used longitudinal content analysis over a 10-year period to examine spiritual coping with trauma

in PLWH; and Bates, Seedat, and Lester (2013) used qualitative methods to examine the consent process for a neurocognitive/neuroimaging study in HIV-infected people with a history of childhood trauma. It is vital that future research continue to take advantage of the full range of qualitative methods to provide a rich template for clinical interventions for PTSD in PLWH.

Conclusions

Ten years after Brief et al. (2004) called for intervention research for HIV and PTSD, the literature is still limited. Currently, there is a need for empirically-supported treatments for PTSD among HIV-infected adults as established by clinician-based diagnosis of PTSD and characterization of symptom clusters from the initiation to the conclusion of treatment. Intervention development is also needed to establish the extent to which tailoring is necessary among specific HIV and PTSD subgroups, as well as with specific empirically-supported techniques (e.g., CBSM, written emotional disclosure, CPT) to ensure effectiveness of an intervention. We recommend the thoughtful selection of clinical intervention research design parameters, as described above, that allow for the specification and testing of interventions that are sufficiently integrative, tailored, and flexible so that they can be sustained in a broad range of diverse, likely resource-limited, settings. These quality interventions will have greatest reach if they are provided in a milieu that is sensitive to treatment barriers at the patient and systems levels. The dissemination of empirically supported, effective PTSD treatments for PLWH will improve the well-being of this patient group, sustain their health through more adaptive HIV disease management, and benefit the public health.

Acknowledgments

Funding note: Some of the author time was supported by grants MH094214 (Safren) and MH084757 (Safren) funded by the National Institute of Mental Health, and P30AI060354 (Walker) from the Harvard University Center for AIDS Research funded by the National Institute of Allergy and Infectious Diseases.

References

- Abramowitz, JS.; Deacon, BJ.; Whiteside, SPH. Exposure therapy for anxiety: Principles and practice. New York, NY: Guilford Press; 2010.
- American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 5. Washington, DC: American Psychiatric Association; 2013.
- Antoni MH, Baggett L, Ironson G, LaPerriere A, Klimas N, Schneiderman N, Fletcher MA. Cognitive-behavioral stress management intervention buffers distress responses and immunologic changes following notification of HIV-1 seropositivity. *Journal of Consulting and Clinical Psychology*. 1991; 59(6):906–916.10.1037/0022-006X.59.6.906 [PubMed: 1774375]
- Antoni MH, Cruess DG, Cruess S, Lutgendorf S, Kumar M, Ironson G, Schneiderman N. Cognitive-behavioral stress management intervention effects on anxiety, 24-hr urinary norepinephrine output, and T-cytotoxic/suppressor cells over time among symptomatic HIV-infected gay men. *Journal of Consulting and Clinical Psychology*. 2000; 68(1):31–45.10.1037/0022-006X.68.1.31 [PubMed: 10710838]
- Bates H, Seedat S, Lester H. A qualitative study of the views of patients with human immunodeficiency virus and childhood trauma on the consent process for a neurocognitive and neuroimaging study. *Primary Health Care Research & Development*. 2013; 15(4):362–374.10.1017/S1463423613000443 [PubMed: 24252666]

- Beckerman NL, Auerbach C. Post-traumatic stress disorder and HIV: A snapshot of co-occurrence. *Social Work in Health Care*. 2010; 49(8):687–702.10.1080/00981389.2010.485089 [PubMed: 20853209]
- Bernard M, Jackson C, Jones C. Written emotional disclosure following first-episode psychosis: Effects on symptoms of post-traumatic stress disorder. *British Journal of Clinical Psychology*. 2006; 45(Pt 3):403–415.10.1348/014466505X68933 [PubMed: 17147105]
- Blake DD, Weathers FW, Nagy LM, Kaloupek DG, Gusman FD, Charney DS, Keane TM. The development of a Clinician-Administered PTSD Scale. *Journal of Traumatic Stress*. 1995; 8(1):75–90.10.1002/jts.2490080106 [PubMed: 7712061]
- Boarts JM, Buckley-Fischer BA, Armelie AP, Bogart LM, Delahanty DL. The impact of HIV diagnosis-related vs. non-diagnosis related trauma on PTSD, depression, medication adherence, and HIV disease markers. *Journal of Evidence-Based Social Work*. 2009; 6(1):4–16.10.1080/15433710802633247 [PubMed: 19199133]
- Brady KT, Dansky BS, Back SE, Foa EB, Carroll KM. Exposure therapy in the treatment of PTSD among cocaine-dependent individuals: Preliminary findings. *Journal of Substance Abuse Treatment*. 2001; 21(1):47–54.10.1016/S0740-5472(01)00182-9 [PubMed: 11516926]
- Brady KT, Killeen TK, Brewerton T, Lucerini S. Comorbidity of psychiatric disorders and posttraumatic stress disorder. *Journal of Clinical Psychiatry*. 2000; 61(Suppl 7):22–32. [PubMed: 10795606]
- Breet E, Kagee A, Seedat S. HIV-related stigma and symptoms of post-traumatic stress disorder and depression in HIV-infected individuals: Does social support play a mediating or moderating role? *AIDS Care*. 2014; 26:947–951. [PubMed: 24666226]
- Brief DJ, Bollinger AR, Vielhauer MJ, Berger-Greenstein JA, Morgan EE, Brady SM, Keene TM. Understanding the interface of HIV, trauma, post-traumatic stress disorder, and substance use and its implications for health outcomes. *AIDS Care*. 2004; 16(Suppl 1):S97–S120.10.1080/09540120412301315259 [PubMed: 15736824]
- Carrico AW, Antoni MH, Duran RE, Ironson G, Penedo F, Fletcher MA, Schneiderman N. Reductions in depressed mood and denial coping during cognitive behavioral stress management with HIV-Positive gay men treated with HAART. *Annals of Behavioral Medicine*. 2006; 31(2):155–164.10.1207/s15324796abm3102-7 [PubMed: 16542130]
- Cavanaugh CE, Hansen NB, Sullivan TP. HIV sexual risk behavior among low-income women experiencing intimate partner violence: The role of posttraumatic stress disorder. *AIDS and Behavior*. 2010; 14:318–327.10.1007/s10461-009-9623-1 [PubMed: 19856093]
- Centers for Disease Control and Prevention. HIV in the United States: At a glance. 2013. Retrieved from: http://www.cdc.gov/hiv/pdf/statistics_basics_factsheet.pdf
- Chesney M, Folkman S, Chambers D. Coping effectiveness training for men living with HIV: Preliminary findings. *International Journal of STD & AIDS*. 1996; 7(Suppl 2):75–82. [PubMed: 8799801]
- Chilcoat HD, Breslau N. Investigations of causal pathways between PTSD and drug use disorders. *Addictive Behaviors*. 1998; 23(6):827–840.10.1016/S0306-4603(98)00069-0 [PubMed: 9801719]
- Cloitre M, Stolbach BC, Herman JL, van der Kolk B, Pynoos R, Wang J, Petkova E. A developmental approach to complex PTSD: Childhood and adult cumulative trauma as predictors of symptom complexity. *Journal of Traumatic Stress*. 2009; 22:399–408.10.1002/jts.20444 [PubMed: 19795402]
- Dutra L, Stathopoulou G, Basden SL, Leyro TM, Powers MB, Otto MW. A meta-analytic review of psychosocial interventions for substance use disorders. *American Journal of Psychiatry*. 2008; 165(2):179–187. [PubMed: 18198270]
- Foa, EB. Posttraumatic Stress Diagnostic Scale (PDS) Manual. Minneapolis, MN: National Computer Systems; 1995.
- Foa, EB.; Keane, TM.; Friedman, MJ.; Cohen, JA., editors. Effective treatments for PTSD: Practice guidelines from the International Society for Traumatic Stress Studies. 2. New York, NY: Guilford Press; 2009.

- Galvan FH, Collins R, Kanouse DE, Burnam MA, Paddock SM, Beckman R, Mitchell SR. Abuse in the close relationships of people with HIV. *AIDS and Behavior*. 2004; 8(4):441–451.10.1007/s10461-004-7328-z [PubMed: 15690117]
- Gaynes BN, Pence BW, Eron JJ, Miller WC. Prevalence and comorbidity of psychiatric diagnoses based on reference standard in an HIV+ patient population. *Psychosomatic Medicine*. 2008; 70(4): 505–511.10.1097/PSY.0b013e31816aa0cc [PubMed: 18378865]
- Golding JM. Intimate partner violence as a risk factor for mental disorders: A meta-analysis. *Journal of Family Violence*. 1999; 14:99–132.10.1023/A:1022079418229
- Gore-Felton, C.; DiMarco, M. AIDS and trauma in the twenty-first century: Implications for prevention, treatment, and policy. In: Carll, EK., editor. *Trauma psychology*. Westport, CT: Greenwood Publishing Group; 2007. p. 79-108.
- Heidt JM, Marx BP, Gold SD. Sexual revictimization among sexual minorities: A preliminary study. *Journal of Traumatic Stress*. 2005; 18:533–540.10.1002/jts.20061 [PubMed: 16281251]
- Ironson G, O'Cleirigh C, Fletcher MA, Laurenceau JP, Balbin E, Klimas N, Solomon G. Psychosocial factors predict CD4 and viral load change in men and women with human immunodeficiency virus in the era of highly active antiretroviral treatment. *Psychosomatic Medicine*. 2005; 67(6):1013–1021.10.1097/01.psy.0000188569.58998.c8 [PubMed: 16314608]
- Keane, TM.; Barlow, DH. Posttraumatic stress disorder. In: Barlow, DH., editor. *Anxiety and its disorders: The nature and treatment of anxiety and panic*. New York, NY: Guilford Press; 2004. p. 417-452.
- Koblin BA, Husnik MJ, Colfax G, Huang Y, Madison M, Mayer K, Buchbinder S. Risk factors for HIV infection among men who have sex with men. *AIDS*. 2006; 26:731–739.10.1097/01.aids.0000216374.61442.55 [PubMed: 16514304]
- Koopman C, Gore-Felton C, Azimi N, O'Shea K, Ashton E, Power R, Spiegel D. Acute stress reactions to recent life events among women and men living with HIV/AIDS. *International Journal of Psychiatry in Medicine*. 2002; 32(4):361–378. [PubMed: 12779186]
- Kremer H, Ironson G. Longitudinal spiritual coping with trauma in people with HIV: Implications for health care. *AIDS Patient Care and STDs*. 2014; 28(3):144–154.10.1089/apc.2013.0280 [PubMed: 24601735]
- Lenderking WR, Wold C, Mayer KH, Goldstein R, Losina E, Seage GR 3rd. Childhood sexual abuse among homosexual men: Prevalence and association with unsafe sex. *Journal of General Internal Medicine*. 1997; 12:250–253.10.1046/j.1525-1497.1997.012004250.x [PubMed: 9127231]
- Leserman J, Whetten K, Lowe K, Stangl D, Swartz MS, Thielman NM. How trauma, recent stressful events, and PTSD affect functional health status and health utilization in HIV-infected patients in the south. *Psychosomatic Medicine*. 2005; 67(3):500–507.10.1097/01.psy.0000160459.78182.d9 [PubMed: 15911916]
- Machtiger EL, Lavin SM, Hilliard S, Jones R, Haberer JE, Capito K, Rose CD. An expressive therapy group disclosure intervention for women living with HIV improves social support, self-efficacy, and the safety and quality of relationships: A qualitative analysis. *Journal of the Association of Nurses in AIDS Care*. 2014 Epub ahead of print. 10.1016/j.jana.2014.05.001
- Magill M, Ray LA. Cognitive-behavioral treatment with adult alcohol and illicit drug users: A meta-analysis of randomized controlled trials. *Journal of Studies on Alcohol and Drugs*. 2009; 70(4): 516–527. [PubMed: 19515291]
- Martinez A, Israelski D, Walker C, Koopman C. Posttraumatic stress disorder in women attending human immunodeficiency virus outpatient clinics. *AIDS Patient Care and STDs*. 2002; 16(6):283–291.10.1089/10872910260066714 [PubMed: 12133263]
- Masten J, Kochman A, Hansen NB, Sikkema KJ. A short-term group treatment model for gay male survivors of childhood sexual abuse living with HIV/AIDS. *International Journal of Group Psychotherapy*. 2007; 57(4):475–496.10.1521/ijgp.2007.57.4.475 [PubMed: 17937509]
- McHugh RK, Hearon BA, Otto MW. Cognitive behavioral therapy for substance use disorders. *Psychiatric Clinics of North America*. 2010; 33(3):511–525.10.1016/j.psc.2010.04.012 [PubMed: 20599130]
- Meade CS, Drabkin AS, Hansen NB, Wilson PA, Kochman A, Sikkema KJ. Reductions in alcohol and cocaine use following a group coping intervention for HIV-positive adults with childhood sexual

- abuse histories. *Addiction*. 2010; 105(11):1942–1951.10.1111/j.1360-0443.2010.03075.x [PubMed: 20840176]
- Najavits LM. Clinicians' views on treating posttraumatic stress disorder and substance use disorder. *Journal of Substance Abuse Treatment*. 2002; 22(2):79–85.10.1016/S0740-5472(02)00219-2 [PubMed: 11932133]
- Nightingale VR, Sher TG, Mattson M, Thilges S, Hansen NB. The effects of traumatic stressors and HIV-related trauma symptoms on health and health related quality of life. *AIDS and Behavior*. 2011; 15:1870–1878.10.1007/s10461-011-9980-4 [PubMed: 21667297]
- O'Cleirigh, C.; Hart, TA.; James, CA. HIV and anxiety. In: Zvolensky, MJ.; Smits, JA., editors. *Anxiety in health behaviors and physical illness*. New York, NY: Springer; 2008. p. 317-340.
- O'Cleirigh C, Ironson G, Fletcher MA, Schneiderman N. Written emotional disclosure and processing of trauma are associated with protected health status and immunity in people living with HIV/AIDS. *British Journal of Health Psychology*. 2008; 13(1):81–84.10.1348/135910707X250884 [PubMed: 18230237]
- O'Cleirigh C, Ironson G, Smits JAJ. Does distress tolerance moderate the impact of major life events on psychosocial variables and behaviors important in the management of HIV? *Behavior Therapy*. 2007; 38:314–323.10.1016/j.beth.2006.11.001 [PubMed: 17697855]
- O'Cleirigh C, Safren SA. Optimizing the effects of stress management interventions in HIV. *Health Psychology*. 2008; 27:397–301.10.1037/a0012607
- Olley BO, Zeier MD, Seedat S, Stein DJ. Post-traumatic stress disorder among recently diagnosed patients with HIV/AIDS in South Africa. *AIDS Care*. 2005; 17(5):550–557.10.1080/09540120412331319741 [PubMed: 16036241]
- Pacella ML, Armelie A, Boarts J, Wagner G, Jones T, Feeny N, Delahanty DL. The impact of prolonged exposure on PTSD symptoms and associated psychopathology in people living with HIV: A randomized test of concept. *AIDS and Behavior*. 2012; 16(5):1327–1340.10.1007/s10461-011-0076-y [PubMed: 22012149]
- Park CL, Blumberg CJ. Disclosing trauma through writing: Testing the meaning making hypothesis. *Cognitive Therapy and Research*. 2002; 26:597–616.10.1023/A:1020353109229
- Pennebaker JW, Mayne TJ, Francis ME. Linguistic predictors of adaptive bereavement. *Journal of Personality and Social Psychology*. 1997; 72(4):863–871.10.1037/0022-3514.72.4.863 [PubMed: 9108699]
- Petrie KJ, Fontanilla I, Thomas MG, Booth RJ, Pennebaker JW. Effect of written emotional expression on immune function in patients with human immunodeficiency virus infection: A randomized trial. *Psychosomatic Medicine*. 2004; 66(2):272–275. [PubMed: 15039514]
- Puffer ES, Kochman A, Hansen NB, Sikkema KJ. An evidence-based group coping intervention for women living with HIV and history of childhood sexual abuse. *International Journal of Group Psychotherapy*. 2011; 61(1):98–126.10.1521/ijgp.2011.61.1.98 [PubMed: 21244204]
- Resick, PA.; Monson, CM.; Rizvi, SL. Posttraumatic stress disorder. In: Barlow, DH., editor. *Clinical handbook of psychological disorders: A step-by-step treatment manual*. 4. New York, NY: Guilford Press; 2008. p. 65-122.
- Resick PA, Nishith P, Weaver TL, Astin MC, Feuer CA. A comparison of cognitive-processing therapy with prolonged exposure and a waiting condition for the treatment of chronic posttraumatic stress disorder in female rape victims. *Journal of Consulting and Clinical Psychology*. 2002; 70(4):867–879.10.1037/0022-006X.70.4.867 [PubMed: 12182270]
- Resick, PA. *Stress and trauma*. Philadelphia, PA: Taylor Francis Inc; 2001.
- Rounsaville BJ, Carroll KM, Onken LS. A stage model of behavioral therapies research: Getting started and moving on from stage I. *Clinical Psychology: Science and Practice*. 2001; 8(2):133–142.10.1093/clipsy.8.2.133
- Safren SA, Gershuny BS, Hendriksen E. Symptoms of posttraumatic stress and death anxiety in persons with HIV and medication adherence difficulties. *AIDS Patient Care and STDs*. 2003; 17(12):657–664.10.1089/108729103771928717 [PubMed: 14746659]
- Scott-Sheldon LAJ, Kalichman SC, Carey MP, Fielder RL. Stress management interventions for HIV+ adults: A meta-analysis of randomized controlled trials, 1989 to 2006. *Health Psychology*. 2008; 27(2):129–139.10.1037/0278-6133.27.2.129 [PubMed: 18377131]

- Seedat S. Interventions to improve psychological functioning and health outcomes of HIV-infected individuals with a history of trauma or PTSD. *Current HIV/AIDS Reports*. 2012; 9(4):344–350.10.1007/s11904-012-0139-3 [PubMed: 23007792]
- Sherr L, Nagra N, Kulubya G, Catalan J, Clucas C, Harding R. HIV infection associated post-traumatic stress disorder and post-traumatic growth: A systematic review. *Psychology, Health & Medicine*. 2011; 16(5):612–629.10.1080/13548506.2011.579991
- Sikkema KJ, Hansen NB, Kochman A, Tarakeshwar N, Neufeld S, Meade CS, Fox AM. Outcomes from a group intervention for coping with HIV/AIDS and childhood sexual abuse: Reductions in traumatic stress. *AIDS and Behavior*. 2007; 11(1):49–60.10.1007/s10461-006-9149-8 [PubMed: 16858634]
- Sikkema KJ, Hansen NB, Tarakeshwar N, Kochman A, Tate DC, Lee RS. The clinical significance of change in trauma-related symptoms following a pilot group intervention for coping with HIV-AIDS and childhood sexual trauma. *AIDS and Behavior*. 2004; 8(3):277–291.10.1023/B:AIBE.0000044075.12845.75 [PubMed: 15475675]
- Sikkema KJ, Ranby KW, Meade CS, Hansen NB, Wilson PA, Kochman A. Reductions in traumatic stress following a coping intervention were mediated by decreases in avoidant coping for people living with HIV/AIDS and childhood sexual abuse. *Journal of Consulting and Clinical Psychology*. 2013; 81(2):274–283.10.1037/a0030144 [PubMed: 23025248]
- Sloan DM, Marx BP, Epstein EM. Further examination of the exposure model underlying the efficacy of written emotional disclosure. *Journal of Consulting and Clinical Psychology*. 2005; 73(3):549–554.10.1037/0022-006X.73.3.549 [PubMed: 15982152]
- Spitzer RL, Williams JB. Revised diagnostic criteria and a new structured interview for diagnosing anxiety disorders. *Journal of Psychiatric Research*. 1988; 22(Suppl 1):55–85. [PubMed: 3172030]
- Theuninck AC, Lake N, Gibson S. HIV-related posttraumatic stress disorder: Investigating the traumatic events. *AIDS Patient Care and STDs*. 2010; 24:485–491. [PubMed: 20632886]
- Tsao J, Dobalian A, Moreau C, Dobalian K. Stability of anxiety and depression in a national sample of adults with human immunodeficiency virus. *Journal of Nervous and Mental Disease*. 2004; 192(2):111–118. [PubMed: 14770055]
- Ursano, RJ. *Effective treatments for PTSD*. Vol. 61. New York, NY: Guilford Press; 2000.
- Whetten K, Whetten RA, Ostermann J, Itemba D. Trauma, anxiety and reported health among HIV-positive persons in Tanzania and the US Deep South. *AIDS Care*. 2008; 20(10):1233–1241.10.1080/09540120801918636 [PubMed: 18608062]

Key Considerations

- Two CBT-based interventions – prolonged exposure (PE) and a coping skills and stress management intervention – were found to be effective for the treatment of trauma-related symptoms in HIV-infected adults.
- Clinician-diagnosed and evaluated PTSD, rather than self-report of symptoms, should be incorporated into clinical practice. This may increase the relevance of study findings to the entire continuum of posttraumatic stress reactions, from elevated distress to true diagnostic cases of PTSD, the latter of which is common among HIV-infected adults.
- Intervention development is needed to establish the extent to which tailoring is necessary among specific HIV and PTSD subgroups, as well as with specific empirically-supported techniques (e.g., CBSM, written emotional disclosure, CPT) to ensure effective interventions.
- The dissemination of empirically supported, effective PTSD treatments for PLWH has the potential to improve the wellbeing of this patient group, sustain their health through more adaptive HIV disease management, and benefit the public health.