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ACT HEALTHY: A Combined Cognitive-Behavioral Depression and Medication Adherence Treatment for HIV-Infected Substance Users

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Abstract

The two most common comorbid conditions with HIV are substance use disorders and depression, and individuals with comorbid HIV, depression, and substance dependence face a more chronic and treatment-resistant course. As an example of how to adapt evidence-based approaches to a complex comorbid population, the current case study examined the integration of a combined depression and HIV medication adherence treatment. The resulting intervention, ACT HEALTHY, combines a brief behavioral activation approach specifically developed to treat depression in individuals receiving residential substance abuse treatment (LETS ACT; Daughters et al., 2008) with a brief cognitive-behavioral approach to improving HIV medication adherence (Life-Steps; Safren et al., 1999; Safren et al., 2009). The current case series demonstrates the use of ACT HEALTHY among 3 depressed HIV-positive, low-income African Americans entering residential substance abuse treatment.

One of the criticisms of cognitive behavioral therapy (CBT) has been the inability to bridge findings from tightly controlled efficacy trials with circumscribed samples to complicated cases, more representative of what is seen in clinical practice (Conrad & Stewart, 2005). Accordingly, clinicians wishing to use CBT interventions with real-world client populations have insufficient resources for how to adapt and extend treatments with demonstrated efficacy to complex populations in the clinic setting. For instance, client populations in clinic settings frequently have significant comorbidity, yet are typically excluded from tightly controlled CBT efficacy trials for treatment of a particular *DSM-IV* (American Psychiatric Association, 1994) diagnosis or problem. This is particularly the case for

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patients with both medical and psychological comorbidity. Because these medical and psychological comorbidities are heterogeneous, they are difficult to study in traditional randomized controlled trials due to challenges recruiting large enough samples to attain maximal internal validity. Accordingly, case report studies can be one way to gain clinical insight into how to extend evidence-based CBT approaches to complicated, comorbid real-world client populations.

One such client population is individuals with HIV, depression, and substance use disorders. HIV is a prevalent and chronic debilitating illness, and the two most common comorbid conditions with HIV are substance use disorders and depression (Bing et al., 2001). Individuals admitted to treatment for substance use are 10 to 20 times more likely to be HIV-infected than the general population (Avins et al., 1994; Woods et al., 2000), and both substance use and HIV significantly increase the likelihood of having major depression (Hasin, Goodwin, Stinson & Grant, 2005; Moneyham, Sowell, Seals, & Demi, 2000; Myers & Durvasula, 1999). Depression is a common and often debilitating problem resulting from the multiple stressors involved in living with HIV, such as reduced social support, isolation, and increased exposure to violence, as well as adjustment to complicated antiretroviral medication regimens (Brooner, King, Kidorf, Schmidt, & Bigelow, 1997; Greene, Frey, & Derlega, 2002; Kokkevi & Stefanis, 1995).

The co-occurrence of HIV, depression, and substance use is associated with decreases in self-care behaviors—for example, lower rates of HIV medication adherence and increased HIV/STD acquisition and transmission (Cook et al., 2001; Kwiatkowski & Booth, 1998; Parsons, Rosof, & Mustanski, 2007; Shoptaw, Peck, Reback, & Rotheram-Fuller, 2003; Treisman, Alberts, & Sahai, 1998). A number of longitudinal studies suggest that depression is associated with accelerated immune system decline and associated mortality in individuals living with HIV (e.g., Evans et al., 2002; Herbert & Cohen, 1993; Stein, Miller, & Trestman, 1991), above and beyond the effects of HIV medication nonadherence (Ironson et al., 2005). Together, these studies suggest the independent role of depression on poor health outcomes, and highlight the importance of treating both depression and HIV medication adherence to improve mental and physical health outcomes in substance-using populations.

Few controlled trials have evaluated treatments that address either depression or substance use in HIV or health behaviors relevant to HIV. The psychosocial approach that has received the most empirical support for treating depression in HIV is CBT (see Olatunji, Williams, Sawchuk, & Lohr, 2006, for a review). CBT-based interventions have demonstrated statistically significant improvements in HIV medication adherence (e.g., Safren, Otto, & Worth, 1999; Safren et al., 2001) and have been recommended as a guideline for best practice compared with other intervention approaches (e.g., Simoni, Frick, Pantalone, & Turner, 2003). CBT has also demonstrated efficacy in treating HIV medication adherence among alcohol users, with gains on adherence, viral load, and CD4 (e.g., Parsons et al., 2007). Most recently, a CBT intervention, which utilized psychoeducation, behavioral activation, cognitive restructuring, and problem-solving techniques, demonstrated effectiveness in improving depression and rates of HIV medication adherence (Safren et al., 2009).

The present open treatment demonstration study sought to examine the extension of previous approaches to improving health behaviors in a triply-diagnosed population: HIV-positive depressed substance users. As an example of how to adapt evidence-based approaches to a complex population, the sample included low-income, urban, minority participants entering residential substance abuse treatment. The approach combined two clinically relevant cognitive-behavioral techniques. The first was a brief CBT approach to improving HIV medication adherence that has previously been tested in a randomized

controlled trial (Life-Steps; Safren et al., 1999, 2009). The second was a brief behavioral activation approach specifically developed to treat depression in individuals receiving residential substance abuse treatment (LETS ACT; Daughters et al., 2008). Behavioral activation has repeatedly proven effective in treating depression alone (Cuijpers, van Straten, & Smit, 2007; Dimidjian et al., 2006; Ekers, Richards, & Gilbody, 2008; Jacobson et al., 1996; Lejuez, Hopko, LePage, Hopko, & McNeil, 2001) and in complex comorbid conditions such as substance dependence (Daughters et al., 2008) and cancer (Hopko, Bell, Armento, Hunt, & Lejuez, 2005; Hopko et al., 2008).

In addition to proven effectiveness, behavioral activation was chosen over more complex CBT treatments for depression due its appropriateness for the current population and ease of integration into a residential substance abuse treatment facility. Although the majority of reviewed treatments for depression among substance users include CBT, the specialized nature and use of multiple modalities poses problems in its integration. Indeed, CBT for depression has been shown to be too time intensive to easily be incorporated into a substance use treatment plan (Morgenstern, Blanchard, Morgan, et al., 2001), and the majority of therapists in traditional substance use treatment settings are not trained to implement CBT or other complex theory-based treatments (McCoy, Messiah, & Zhao, 2002). Given that the majority of residential substance abuse facilities provide short-term care (approximately 30 days), the ability to integrate a specialized treatment for depression within an ongoing substance abuse treatment program in a short time period is critical. Further, despite the success of CBT for depression more generally, adequate cognitive functioning is necessary for many of the treatment components (Gottschalk et al., 2001). In a recent review, the relationship between CBT treatment outcomes and cognitive deficits were examined in patients with cocaine dependence (Aharonovich et al., 2006). Findings indicated that CBT dropout rates were highest among patients with poorer cognitive functioning, namely, lower scores on attention, memory, spatial ability, speed, accuracy, global functioning, and cognitive proficiency. As such, the authors recommended that CBT-based psychosocial treatments be modified to accommodate drug users with cognitive impairments in order to improve depression and substance use outcomes.

The resulting combined intervention is called ACT HEALTHY, which we implemented among depressed HIV-positive low-income African American substance users. The following case series demonstrates the feasibility and initial effectiveness of integrating the ACT HEALTHY treatment in a residential substance abuse treatment facility, and provides clinical illustrations of how this was accomplished.

Method

ACT HEALTHY Intervention

ACT HEALTHY combines a behavioral activation (BA) treatment for depression with a CBT intervention for HIV medication adherence for individuals in residential substance abuse treatment. An outline of the content of each ACT HEALTHY session is provided in Table 1, and the intervention is detailed below.

BA utilizes a functional approach to treating depression, focusing on goal-setting and generating activities across a range of life values. The fundamental theme of reinforcement overlaps with typical components of substance use treatment, such as decreasing avoidant tendencies and improving social support. Thus, utilization of a functional reinforcement approach targets depressive symptoms while concurrently addressing practical elements such as substance-free daily activities and goals, thereby targeting problems that arise from the unique combination of depressive symptoms and substance use (Rounsaville, 2004). The LETS ACT was modified from the Brief Behavioral Activation Treatment for Depression

(Lejuez, Hopko, & Hopko, 2001) to specifically accommodate the needs and lifestyles of a low-income substance-using population currently receiving residential substance abuse treatment (Daughters et al., 2008). Components of LETS ACT include (a) self-monitoring of daily activities; (b) delineating goals across a variety of life values (e.g. family, social, and intimate relationships, education, employment/career, hobbies/ recreation, volunteer work/charity, physical/health issues, and spirituality); (c) constructing an activity plan that maps onto the goals and values assessment; (d) charting of daily goals and activities; (e) identification of rewards at each session as incentives for completing daily activities and goals; (f) construction and utilization of behavioral contracts signed by each client and a friend or family member outlining behaviors that will help increase the client's engagement in rewarding activities; and (g) the development of a posttreatment plan consistent with the client's important life areas and activity goals.

Life-Steps is a single-session HIV medication adherence intervention utilizing cognitive-behavioral, motivational interviewing, and problem-solving techniques aimed to enhance motivation, rehearse adherence-related behaviors, and solve problems that interfere with adherence to HIV medications (Safren et al., 1999). In the ACT HEALTHY intervention, Life-Steps is presented during Session 1 of treatment, and then reviewed in the context of each subsequent session. During Session 1, informational and motivational interventions are presented first, supplemented by a videotape presentation. In addition to an illustration of the inhibition of viral replication and the consequences of a missed dose, the videotape presents psychoeducational information about the role of HIV medications in suppressing viral replication as well as the consequences of missing a medication dosage. The remainder of the session targets 11 informational, problem-solving steps, including (1) psychoeducation; (2) transportation to appointments; (3) obtaining medications; (4) communication with providers; (5) coping with side effects; (6) formulating a daily medication schedule; (7) storage of medications; (8) cues for pill-taking; (9) guided imagery review of successful adherence in response to daily cues; (10) responses to slips in adherence; and (11) review of procedures.

Taken together, ACT HEALTHY is focused on providing the client with an understanding of the cyclical relationship between the quality and quantity of activity involvement, depressive symptoms, HIV medication adherence, and substance use. The BA rationale underlying this cycle is displayed in Fig. 1, and is presented to each client during each session. Although Life-Steps is presented in its original format in Session 1, it continues to be integrated into the continuing sessions. First, in addition to substance use, the BA treatment rationale incorporates the relationship between negative mood, urges, and medication adherence. Given that side effects of HIV medication include physical symptoms and negative mood (e.g., Remien et al., 2003), patients often experience the urge to skip their medication and/or use their drug of choice to alleviate these symptoms. The choice to take their medication is presented as an alternative that will ultimately decrease negative mood over time via a reduction in physical side effects that occurs with consistent medication adherence. Second, medication monitoring is presented in the patient manuals alongside the daily monitoring forms for Sessions 1 through 4. Third, physical/health issues is a specific life value in BA, and goals regarding HIV medication adherence are generated in this context and incorporated into the Daily Goals homework forms. For example, daily goals related to physical/health issues may include aspects specific to Life-Steps such as scheduling doctor appointments, arranging transportation to appointments, and remembering to get a prescription refilled.

Participants and Treatment Setting

The study was conducted at a residential substance abuse treatment facility located in northeast Washington, DC. Clients at this facility include individuals who are referred by

government agencies or are mandated to treatment by the court system. Standard residential drug treatment consists of clients attending daily treatment groups that address a broad range of topics such as relapse prevention, functional analysis, stress management, anger management, and spirituality. Additional groups include teaching basic education, life, and occupational skills. Clients also attend daily Alcoholics Anonymous/Narcotics Anonymous meetings. Treatment groups are typically conducted Monday through Thursday from 9:00 a.m. 8:00 p.m., with breaks for meals and recreation. With the exception of nicotine, residents are required to maintain abstinence as verified by regular urine drug screens and are permitted to leave the center grounds during treatment only for treatment-required activities (e.g., group retreats, physician visits). Residents with co-occurring psychiatric diagnoses are often referred to off-site health centers to receive psychiatric treatment as the treatment center does not provide such services. All medications are stored in a locked room and provided to residents by a nurse practitioner at the time of their scheduled dosage. Clients are required to remember to visit the nurse to get their medication on their own, reminders are not provided, and adherence is not enforced by the treatment center.

All HIV-positive individuals were referred to the research team by center staff in order to determine eligibility for participation in the study. Eligibility requirements included a *DSM-IV* diagnosis of major depressive disorder (MDD), HIV-positive, and fluent in English. Exclusion criteria included a current diagnosis of psychotic disorder (due to concerns regarding ability to comprehend treatment content), starting a new psychotropic medication regimen within the past 3 months, and an inability to provide informed consent. A total of five participants were approached and asked if they would be interested in participating in a treatment study aimed at helping improve health and negative moods. All five participants met eligibility requirements and provided informed consent. Of the 5 recruited participants, one received a lengthy contract extension in the residential facility and therefore did not participate in the outpatient portion of treatment, and another participant was not recommended for HAART due to a CD4 count of > 350 (see DHHS NIH Guidelines, 2008 for a discussion of this issue). As such, we focus on the three remaining participants for the case series discussed below.

Procedure

Participants in ACT HEALTHY were assigned to receive 4 weeks (8 sessions, twice per week) of individual treatment while in the residential substance abuse treatment center, followed by 8 weeks (8 weekly sessions) of individual outpatient treatment following discharge from the residential center (a total of 16 treatment sessions over 12 weeks). Study therapists included predoctoral students in psychology. Therapist training included a review of BA theory and overview of a detailed therapist manual developed by the first author, treatment role-plays with study therapists taking turns providing and receiving the treatment with the first author, and off-site training in Life-Steps with members of Dr. Safren's (developer of Life-Steps) research team. All sessions were audiotaped and reviewed in weekly supervision sessions with the first author.

Outcome variables were assessed and biochemical measures of substance use were collected at baseline (Week 0); the end of their residential substance abuse treatment (Week 4); the end of the ACT HEALTHY treatment (Week 12); and at 1- and 3-month post-ACT HEALTHY treatment follow-ups. The outcome measures were depression, HIV medication adherence, posttreatment substance use, and indicators of physical health. We also examined the mechanisms theorized to underlie changes in depression, namely, BA and enjoyment and perceived reward value of activities.

Assessment Measures

Psychiatric diagnosis and severity of depression—Axis I psychiatric diagnoses were determined using the Structured Clinical Interview for DSM-IV (SCID-I; First, Spitzer, Gibbon, & Williams, 2002) and Axis II diagnoses (only borderline and antisocial personality disorders) were assessed using the Structured Clinical Interview for DSM-IV Personality Disorders (SCID-II; First, Gibbon, Spitzer, Williams, & Benjamin, 1997). In addition to the SCID, the Hamilton Depression Rating Scale—7-item version (HAMD-7; Maier & Philip, 1985) was administered in order to determine the severity the clients' presenting depressive symptoms. A score of 3 or below indicates remission of depression (McIntyre et al., 2005). The SCID and the HAMD-7 were administered at baseline, residential treatment discharge, outpatient treatment discharge, and the 1- and 3-month follow-up assessments. Participants completed the 21-item self-report Beck Depression Inventory-II (BDI-II; Beck, Steer, & Ball, 1996) as a self-report measure of depressive symptoms. Each item is rated on a 0-to-3 scale with summary scores ranging between 0 and 63. A total score of 0 to 13 is considered minimal range depressive symptoms, 14 to 19 mild, 20 to 28 moderate, and 29 to 63 severe depressive symptoms.

Behavioral Activation (BA)—Two self-report measures were used to compare levels of BA. First, the 10-item Environmental Reward Observation Scale (EROS; Armento & Hopko, 2007) assesses one's general enjoyment and perceived reward derived from activities as a measure of environmental reinforcement on a scale from 10 to 40, with higher scores indicating higher levels of environmental reinforcement. Second, the 25-item Behavioral Activation for Depression Scale (BADSD; Kanter et al, 2007), specifically designed to assess when and how clients become more activated over the course of treatment, measures activity level across goal-directed, avoidance, social, and work/school-related activities, on a scale from 0 to 150 (with 150 indicating higher levels of activation). Both measures have good factor structure, internal consistency, test-retest reliability, and construct and predictive validity (Armento & Hopko, 2007; Kanter et al., 2007).

Physical and emotional health outcomes—The Quality of Life: SF-36 (Ware, Kosinski, & Keller, 1994) was used as a clinician-administered measure of physical health. The measure consists of two distinct higher-ordered factors including the Physical Component Summary (PCS), consisting of physical functioning, role-physical, and bodily pain subscales, and the Mental Component Summary (MCS), consisting of mental health, role-emotional, and social functioning subscales. The SF-36, and specifically the two higher-order PCS and MCS subscales, have been widely used and well validated in a variety of health contexts and populations (McHorney et al., 1993, 1994; Ware & Gandek, 1998). Previous studies have utilized the MCS subscale as a screener for psychiatric disorders, using 42 as a cutoff score (Berwick, 1991; Ware et al., 1994). Studies utilizing the SF-36 with HIV-positive samples have found a PCS mean of 49.1 ($SD=12.9$) and an MCS mean of 43.5 ($SD=12.5$), with higher scores indicating less impairment and better overall functioning (Hsiung et al., 2005).

Substance use—In addition to assessing current and lifetime substance dependence diagnoses with the SCID, participants completed a self-report measure of substance use frequency in their lifetime, past year, and period of heaviest use at the baseline session. The clinician-administered Timeline Follow-back (TLFB; Sobell, Maisto, Sobell, & Cooper, 1979) and urinalysis were used for the assessment of substance use during all postresidential treatment follow-ups. Urinalysis accurately measures substance use within 3 days prior to the test (Enzyme Multiplied Immune Test (EMIT), Pharmchem Laboratories).

Medication adherence—Medication adherence was assessed with the AACTG Adherence to Anti-Retroviral Medications Questionnaire (Chesney, Morin, & Sherr, 2000). The AACTG was clinician administered at all time points for ease of comprehension. The participants were asked the following information for all medications taken: name of drug, prescribed doses per day, prescribed number of pills per dose, and any special directions (e.g., “with food,” “on an empty stomach,” or “with plenty of fluids”). Following procedures used at the Center for AIDS Prevention Studies at the University of California, San Francisco (CAPS), the baseline assessment included questions pertaining to the last time HIV medications were skipped (e.g., within the past 2 days; within the past 2 weeks; 2 to 4 weeks ago; 1 to 3 months ago; more than 3 months ago; or never). Each subsequent assessment included similar questions regarding HIV medication taken in each of the last 4 days.

Results

A brief description of each of the three participants is provided in this section to illustrate the feasibility, acceptability, and preliminary outcomes for ACT HEALTHY among depressed HIV-infected individuals in residential treatment. To protect participants' confidentiality, we do not report extensive personal information, and the names given have been changed.

Case 1

John M. was a heterosexual African American male in his early 30s who entered residential substance abuse treatment voluntarily and presented with recurrent MDD, posttraumatic stress disorder, antisocial personality disorder, and alcohol dependence. With regards to his substance use prior to treatment, John M. reported drinking a daily minimum of 12 alcoholic beverages as well as smoking marijuana 3 to 4 days per week. Although John M. resided with his wife, his mother, his biological 8-year-old daughter, and his two school-aged step-children prior to treatment, he reported intentionally isolating himself from family and peers due to an overwhelming fear that he might transmit HIV to people with whom he came in casual contact. His social isolation was furthered by his current state of unemployment. John M. was, however, in regular contact with peers as he was attending classes to receive his GED.

John M. reported contracting HIV 4 years ago through repeated sexual intercourse with his wife, who he knew was HIV-positive. The daily prescription regimen of John M. included two psychotropic medications, Zoloft (sertraline) and Seroquel (quetiapine), as well as three antiretrovirals, Kaletra (lopinavir/ritonavir), Sustiva (efavirenz), and Combivir (zidovudine/lamivudine). At the baseline assessment he reported regularly missing his daily dosages of medications. John M. attributed the majority of his nonadherence to both forgetfulness as well as symptoms of depression (e.g., feelings of shame and hopelessness) that he associated with his HIV diagnosis. Therefore, delineating new cognitive associations of his medications was identified as a primary goal of treatment, which is part of the adherence component (Life-Steps) of the program.

The first few sessions for John M. progressed at a normal pace as he clearly understood the treatment rationale (Fig. 1) and was both receptive to treatment and eager to get help. The first session focused primarily on addressing the depression cycle and how this cycle related to his substance use and medication nonadherence. The client's HIV diagnosis was intricately associated with the maintenance of both his depressive symptoms and substance use. More specifically, he was able to identify how feelings of anger, general sadness, shame, and hopelessness created urges to drink, isolate, skip his medications, and get into fights. Contributing to John M.'s cycle of depression and medication nonadherence, he had

ceased engaging in nearly all enjoyable activities. As such, when prompted in session, John M. had a difficult time generating a list of activities that he found pleasurable. He eventually reported that he once enjoyed playing sports (e.g., basketball and football) and spending time with his daughter. In particular, he reported that these activities made him feel accomplished and loved. However, at the start of treatment he reported no longer engaging in such behaviors due to his irrational fear of transmitting HIV to her via close proximity. In between the first couple of sessions, John M. fully completed his daily activity sheets and practiced the planned relaxation exercises when he felt stressed or overwhelmed outside of the treatment sessions.

In the third session, the therapist introduced discussion of life values and goals. He reported having many things that he wanted to work on now that he was sober; however, it was evident that John M. was unable to identify specific activities that he could do to help meet these goals. The life values that he stressed as most important to him were that of family relationships and physical health. More specifically, the client wanted to rebuild the relationships with his daughter and his mother, which he felt had been damaged by his substance use and depression. To begin working towards this, as a first activity the client decided to write daily letters to selected family members to apologize for his past behavior as well as to inform them of his progress throughout treatment. With regards to physical health, John had expressed a desire to take a more active role in his health. To this end, he began keeping a log of his CD4 count and viral load in his ACT HEALTHY patient booklet when he went to his monthly doctor visits. He also noted indices of health improvement such as weight gain, improved skin complexion, and normalized heart rate, which he indicated gave him feelings of pride and hope when he could see these improvements written down.

Additional goals within respective life values were to attain his GED (life value: education), create a resume and secure a job for posttreatment (life value: employment), play basketball with other men in treatment (life value: hobbies/recreation), be more verbal in NA/AA (life value: sobriety), volunteer outside of treatment (life value: volunteer work), and read the Bible every night before bed (life value: spirituality). Throughout treatment, John M. regularly completed activities consistent with attempting to meet his stated goals and often also used his goal-setting homework exercises to address problems related to his medication adherence and other physical health issues.

Our final sessions focused primarily on reflecting on his progress in treatment as well as posttreatment planning. By the end of treatment, the client had a variety of successes related to his life value goals. He had improved his medication adherence and attendance at medical appointments, taken on more responsibilities at the treatment center, found a job for posttreatment, corresponded regularly with his mother and his daughter, volunteered feeding the homeless, began to feel comfortable playing basketball with other clients, and even cultivated a few close friendships among the other clients at the program. His engagement in these productive and meaningful activities corresponded with a decrease in depression over the course of treatment.

The biggest obstacle for John M. was that he became habituated to the treatment provided by the center and therefore experienced increasing levels of frustration and boredom. As feelings of accomplishment were key to John M.'s success, the therapist focused on regularly generating new goals and activities that he could work on while in treatment, a cornerstone of BA. At the conclusion of residential substance abuse treatment, John M. moved back in with his wife, daughter, and step-children, and was working two stable jobs in building maintenance, one with daytime hours and the second during the evenings and weekend hours. He secured both jobs through his former employer.

As indicated in Table 2, from treatment entry through a 3-month posttreatment follow-up John M. evidenced remission from MDD, a decrease in depressive symptoms, continued abstinence from substances, and improvements in BA, environmental reward, physical and mental health, and HIV medication adherence. He evidenced optimal adherence to the ACT HEALTHY intervention, completing all 16 sessions, and overall, he completed 62.3% of his homework assignments and accomplished 87.4% of his designated daily goals.

Case 2

Daryl S. was an African American gay male in his mid-40s with recurrent MDD, social phobia, subthreshold borderline personality disorder, antisocial personality disorder, and alcohol and crack/cocaine dependence. With respect to his substance use, he reported using crack/cocaine daily and had multiple past admissions to drug treatment. He had previously spent 2 months in jail for drug possession; however, this admission to residential drug treatment was voluntary. He was unemployed, received his high school degree, and completed 2 years of college. He had been working as a cook on and off following completion of school, and his most recent employers agreed to give him time off to complete residential drug treatment. Although he often lived with his parents, Daryl S. was homeless upon treatment entry. In addition, the client reported having a tumultuous relationship with his parents and no real network of support. The client experienced some distress as a result of this and therefore cited making and maintaining positive friendships as a principal goal of treatment.

Daryl S. reported contracting HIV 13 years ago from repeated sexual intercourse with an HIV-positive male, and 2 years later was prescribed a HAART regimen. His current HAART regimen consisted of Reyataz (atazanavir), Norvir (ritonavir), and Truvada (tenofovir DF/emtricitabine). At baseline, Daryl S. reported irregular medication adherence, which he attributed to forgetfulness because his regimen was too complicated. He was eager to learn skills to improve his adherence because when he missed doses he experienced lethargy, muscle aches, tingling in extremities, and stiffness in his joints, all of which interfered with his normal daily functioning.

The treatment rationale was reviewed in the first session (Fig. 1). The client reported that he was often bothered by feelings of boredom, disappointment, and loneliness. When he experienced these feelings, his typical behavioral response was to use crack/cocaine and to isolate from family and peers. The client had no difficulty comprehending the rationale of treatment, and easily recognized the link between his negative feelings and desire to use substances and/or isolate.

The assessment of his life values and goals began in Session 3. The primary goals that Daryl S. generated were to reconnect with his family (life value: family relationships), exercise (life value: physical health), increase his HIV medication adherence (life value: physical health), get closer to God through regular prayer (life value: spirituality), and acquire information and materials necessary to gain a certification in food services (life value: employment). The client regularly completed his homework and was able to come up with creative ways to address these goals, such as writing letters to his family, talking to the center's chaplain about ways to incorporate spirituality into his daily living, and speaking with the kitchen staff in the treatment center about ways to attain his intended certifications. In addition, by the end of treatment, the client had secured an NA sponsor who he felt was very supportive of his life and sobriety goals.

Daryl's focus on his physical health-related goals was evidenced by his improved medication adherence and decline in physical-related symptoms. Throughout the course of treatment, Daryl S. was fully adherent to his HAART regimen and also reported a steady

decline in the side effects he had been experiencing prior to treatment. As the client was very well educated about the effects of HIV and the necessity of full adherence to antiretrovirals, treatment largely focused on devising specific skills and techniques to improve adherence rather than psychoeducation. These skills were also addressed in line with his specific physical health goals delineated in the BA goal-setting exercises. For example, he decided to start bringing his medications that required refrigeration in a small cooler to work, which he wrote in the patient manual as part of the daily goal-setting homework exercise.

Toward the end of residential treatment, the client appeared increasingly nervous and anxious, which he associated with his upcoming discharge from the residential treatment center. The treatment rationale was then reexamined to address the difficulties that he might face posttreatment. Specifically, Daryl S. reported that during his past recovery attempts, maintaining sobriety was very easy immediately following treatment discharge because his family closely monitored his behaviors. However, when they stopped monitoring him, Daryl S. reported having felt ignored and unloved, thereby triggering relapse. To address this issue, he developed contracts for his parents asking them to openly discuss when and why their monitoring behaviors change, occasional “check-ups” irrespective of the stage of his recovery, and other ways to show care and love. Additionally, Daryl S. reported feeling “out of control” when he receives a regular paycheck, which in the past was usually followed by spending all of his money on drugs. Therefore, having identified extra money as a primary trigger to his drug use, Daryl S. decided to increase scheduled activities around this time (e.g., attending NA groups) to avoid the temptation to spend his paychecks on drugs.

During the outpatient sessions, the client reported feelings of hopelessness and guilt over how difficult it was for him to maintain sobriety. More specifically, the client reported repeated contact with people, places, and things that tempted him to get high. In response to the emotions elicited by these environmental triggers, the client was resistant to engage in some of the activities that he intended to do posttreatment and, in turn, he became increasingly isolated. The importance of regular engagement in activities that had made him feel accomplished and content in earlier sessions was reviewed in treatment. Although he expressed understanding of this concept, he had extreme difficulty in generalizing the skills learned outside of treatment. He reported fulfilling his daily goals of going to work and regularly taking his medications; however, he failed to complete his homework once discharged, and more importantly, he was not willing to participate in any of his intended pleasurable activities. He also reported not feeling the sense of pride and motivation that he initially felt when he was taking charge of his physical health. Daryl S. continued to report feelings of loneliness, boredom, and fear, and although he was not using any substances at the time, was questioning his ability to maintain long-term sobriety.

As indicated in Table 2, from treatment entry through the final outpatient assessment, Daryl S. evidenced remission from MDD, a decrease in depressive symptoms, continued abstinence from substances, and improvements in BA, physical and mental health, and HIV medication adherence. Contrary to these improvements, he reported a slight decrease in environmental reward. Daryl S. did not attend either the 1- or 3-month follow-up; therefore, it is unclear if he was able to maintain treatment gains. He attended 15 of the 16 (93.8%) treatment sessions, completed 36.7% of the homework assignments, and completed 92.5% of the daily goals he set for himself. The client’s homework completion suffered significantly during the outpatient portion of treatment, citing his self-doubt and environmental difficulties as the main interfering factors.

Case 3

William J. was a heterosexual African American male in his early 50s who was diagnosed with recurrent MDD, posttraumatic stress disorder, borderline personality disorder, antisocial personality disorder, as well as current and lifetime alcohol, marijuana, heroin, and crack/ cocaine dependence. Heroin was the client's reported drug of choice; he began using heroin at the age of 12, dropped out of school after 8th grade, and had been injecting drugs regularly since. The client had been in repeated court-ordered residential drug treatment centers in the past, but this admission was voluntarily and triggered by a recent "disgust" with his homeless lifestyle and reported a need to address his medical conditions in addition to his substance use. The client reported limited social support outside of treatment. Despite having seven children, he was not close to any of them or any other family members. He also had limited community contact, given that he has not held a job for over 35 years and spent the majority of his life in prison, where he reported injecting heroin regularly. The client had been in a cycle of homelessness, depression, and drug use since an early age, presenting a challenge in treatment given his additional complex medical comorbidities and lack of social support.

The client acquired HIV and Hepatitis C while in prison 16 years ago. He reported being prescribed a HAART regimen for a short period of time while incarcerated, but he stated negative attitudes towards his medication and repeated nonadherence as reasons for why he terminated the regimen. The client also had diabetes and hypertension. His poor health, as well as his infrequent access to health care services, was a primary stressor in his life, and receiving treatment for all medical conditions was an important goal at the start of treatment. Given that the client was homeless prior to treatment and without medical care for almost a year, he was not taking any prescription medications.

In the first session, the client cited anger, fatigue, sadness, loneliness, resentment, and abandonment as negative feelings that had triggered his substance use, and that using substances made these negative feelings worse. Due to William J.'s severe depression and extensive incarceration and substance use history, it was very difficult to identify enjoyable activities outside of substance use. The therapist asked the client to generate a list of activities from his childhood. This strategy was successful for illustrating the connection between one's activities and mood, thereby setting the stage for future sessions to build on current goals and activities.

The first few sessions for this client moved slowly due to the client's medical problems. William J. often reported physical pain due to an infection on his leg and his energy level was very low, which was also observable by the therapist, and affected his ability to engage in activities at the center. He did not complete any homework assignments during the first four sessions, citing physical pain and low energy as the main causal factors. As such, his difficulty engaging in treatment-related activities as well as other activities at the center was a main target in ACT HEALTHY.

Life values and goals were addressed during the fourth session. The main goals for this client were for physical health, and he delineated numerous ways in which he hoped to improve his medical condition, in particular to start a HAART regimen and to obtain medication for his other conditions (Hepatitis C, diabetes, and hypertension). The problem-solving modules of Life-Steps were particularly useful in generating activity options for William to work towards these goals (i.e., getting in touch with various medical clinics and listing out questions for his physician). He also reported a desire to go back to school to get his GED (life value: education), obtain an addictions counselor license once he is fully recovered (life value: employment), volunteer to work with child abuse victims (life value: volunteer work), and to start engaging in "fun" activities such as drawing and painting (life

value: hobbies/recreation). The completion of this exercise was a remarkable improvement from previous sessions in which he had difficulty generating ideas for enjoyable activities. Given the client's priority of education as a main life value goal, the therapist suggested that homework completion was a skill he would need to practice to help him when he returned to school. William J. responded well to this suggestion, which was followed by an improved homework completion rate in future sessions.

Treatment was interrupted after the fifth session, when the client was admitted to the hospital for a leg infection and cardiovascular problems as a complication of diabetes. The client had set up a physician appointment to obtain a HAART regimen as part of his daily goals but he was unable to attend given his hospitalization. Once he was back at the residential treatment center, he indicated that a main physical health goal was to reschedule his physician appointment, which he was able to do that same week. In Session 6, the therapist revisited Life-Steps, with a specific focus on the client's negative cognitions regarding his medications. The Life-Steps educational video was particularly useful for this client, as negative cognitions towards medication were directly related to his continued refusal to adhere to medication regimens throughout his life.

Although later sessions focused on life values other than physical health, the client had difficulty moving beyond medical-related goals. Initiating HAART was indeed a big accomplishment for this client, as well as receiving medical treatment for his other conditions, which were both facilitated by Life-Steps problem-solving exercises and the LETS ACT Daily Goals homework exercises. Progress in other areas (e.g., attending GED class) was difficult due to often missing classes because of hospital visits or physical pain. The main treatment goals accomplished by this client were predominantly related to medication adherence, including initiation of HAART, reduction in anxiety related to HAART medications, a shift in negative medication-related attitudes, and an increased ability to ask questions at physician appointments.

Prior to his final ACT HEALTHY session, William J. was caught using prescription Oxycodone, and therefore was removed from the residential treatment center. Despite having a legal prescription, in line with the rules and regulations at the treatment center, the client had been instructed that he was not permitted to have any opioid medications in his possession. As such, contact with William J. was lost, and therefore no additional treatment sessions or assessments were conducted. As indicated in Table 2, from treatment entry through the residential discharge assessment William J. evidenced remission from MDD, a decrease in depressive symptoms, and an increase in environmental reward. However, he reported a decrease in BA and physical and mental health SF-36 scores. Overall, William J. attended 11 of 16 (68.8%) treatment sessions, during which time he completed 45.5% of his homework assignments and 64.3% of his daily goals.

Discussion

The implementation of ACT HEALTHY in this case series provides initial evidence for the successful integration of a BA treatment for depressed substance users (LETS ACT) with a cognitive behavioral medication adherence intervention (Life Steps) for HIV-positive depressed substance users in residential treatment. Moreover, ACT HEALTHY resulted in overall improvements across rates of depression, initiation of a HAART regimen, and improvements in HIV medication adherence across all cases. Coinciding with these improvements, preliminary data demonstrate increases in BA and environmental reward in two out of three cases. Furthermore, the case series supports the feasibility of integrating empirically supported cognitive behavioral approaches into real-world, complex patient settings. Each of the case examples presented not only met the inclusion criteria of

depression, substance dependence, and HIV, but also met criteria for multiple psychiatric and medical comorbidities, which is a common occurrence among substance users (e.g., Ford et al., 2009) and speaks to the generalizability of ACT HEALTHY. Despite complex clinical conditions, clients were able to complete the treatment, with two out of three clients completing treatment through the last session. This is notable, given estimates that 35% to 80% of clients prematurely drop out of residential substance abuse treatment programs (Simpson et al., 1997).

The cornerstone of the depression treatment in ACT HEALTHY is the use of BA strategies. Although previous work using BA to treat depression has examined activity change via changes in perceived environmental reward (Armento & Hopko, 2009; Daughters et al., 2008), this case series is the first to examine simultaneously changes in environmental reward as well as activity level across goal-directed, avoidance, social, and work/school-related BA. As expected, decreases in measures of depression coincided with overall increases in both activity level and perceived environmental reward. However, it is of note that although Case 2 evidenced an increase in overall activity level, his environmental reward remained relatively unchanged. Although Case 2 did not test positive for substance use, he indicated concern of a potential relapse and did not attend any of the posttreatment follow-up assessments. Although no definitive conclusions can be drawn from this case, it does highlight the need for future work to examine the relative contribution of changes in activity level versus changes in environmental reward in the treatment of depression.

Given that the population is one with significant medical and psychological impairment that typically follows a treatment-resistant course, the case study was not without significant obstacles. One obstacle included attendance at outpatient treatment sessions and research assessment follow-ups. Although a common occurrence for a population with complex medical and psychiatric comorbidities who are often homeless, frequently changing contact information and place of residence, as well as prone to relapse, future efforts must be made to increase retention rates during the outpatient portion of treatment. As evident from the case study, continued use of ACT HEALTHY strategies were applicable to clients adjusting to their natural environments in the absence of substance use, and suggest that important therapeutic gains are made in the outpatient stage of recovery. In particular, both Case 1 and Case 2 demonstrated shifts in life values and goals following discharge from residential treatment, which were incorporated into their ACT HEALTHY treatment plan. Thus, modifications to improve retention rates may include meeting less frequently, conducting sessions over the phone, providing clients with additional reminder calls for scheduled appointments, or looking at ways to provide incentives for participation. Although efforts were made to ensure confidentiality and make clients feel comfortable returning to the residential treatment center for outpatient follow-ups, this may be an obstacle that would benefit from additional discussion during sessions.

A substantial issue following this case study was the need for flexibility within the context of a manualized intervention, such as when to begin the outpatient portion of treatment if the patient has not yet been discharged from residential treatment due to a contract extension. In particular, the study calls for flexibility in timing of initiation of outpatient segments as well as the incorporation of Life-Steps. Future work must include a specific protocol as to how to deal with changing contract lengths in the context of a residential treatment center in which contract length is often extended. In addition, given the inconsistencies in how quickly a patient initiates HAART and/or the differing lengths of time a patient has already been on a given regimen, the emphasis on medication adherence needs to be adjusted based on patient needs. For instance, the therapist for Case 3 chose to review Life-Steps in detail during Session 6 due to his upcoming physician visit to begin a HAART regimen.

Client's medical care, including HAART administration and oversight, was not provided on-site at the residential treatment center, and all patients sought care from different medical providers, resulting in fragmented, inconsistent, and poorly coordinated medical care. A future improvement in implementing ACT HEALTHY would be increased coordination with medical sites, for instance, the development of a protocol in which medical professionals are incorporated into the study prior to the start of treatment. Enhanced communication with patients' physicians would enable a smoother and quicker initiation of HAART, improved awareness of any patient issues on HAART, as well as more up-to-date collection of biological measures of disease progression until collection of these measures is included in the study procedure. Along with increased consistency regarding the initiation of HAART, tracking of adherence should also be improved in future trials, particularly by using MEMS Caps equipment supplemented by self-report adherence information.

Finally, the majority of clients were inconsistent with their homework completion, primarily during the outpatient sessions. Reasons for poor homework completion rates included difficulty with time management in their real-world settings, low motivation, and poor physical health (e.g., low energy). The patient manual and homework assignments could be modified based on commonalities in patient difficulties, including lack of comprehension of the assignment or its purpose, as well as reducing the burden of assignments. Lastly, an incentive program in line with their life values and goals may also be useful in encouraging homework completion.

A number of limitations are of note. First, the case series relied on the self-report assessment of HIV medication adherence. Although a number of studies have indicated high agreement among self-report and electronic monitoring assessment techniques (Simoni et al. 2006), others indicate that electronic monitoring yields lower rates of adherence (Bangsberg et al., 2005). As such, it is recommended that future studies utilize a multimethod assessment approach. Second, we did not utilize a control group, thereby limiting our ability to draw definitive conclusions regarding the effectiveness of ACT HEALTHY on primary outcomes. Third, treatment fidelity was monitored via review of audiotapes during weekly supervision with the first author. Future studies with larger sample sizes should utilize an independent rater trained in ACT HEALTHY for this purpose. Finally, given the high rates of psychiatric comorbidity, and anxiety disorders in particular, it will be important for future research to measure the role of changes in anxiety symptoms, especially given evidence that BA has been shown to reduce anxiety symptoms among depressed substance users (Daughters et al., 2008).

Taken together, this case series demonstrated several positive steps towards integrating the ACT HEALTHY treatment for depression and HIV medication adherence into a residential substance abuse treatment facility. Future work addressing study limitations in an adequately powered randomized control trial, comparing ACT HEALTHY to treatment as usual (or a comparison treatment), will be important for establishing the effectiveness of ACT HEALTHY in improving targeted physical and mental health outcomes.

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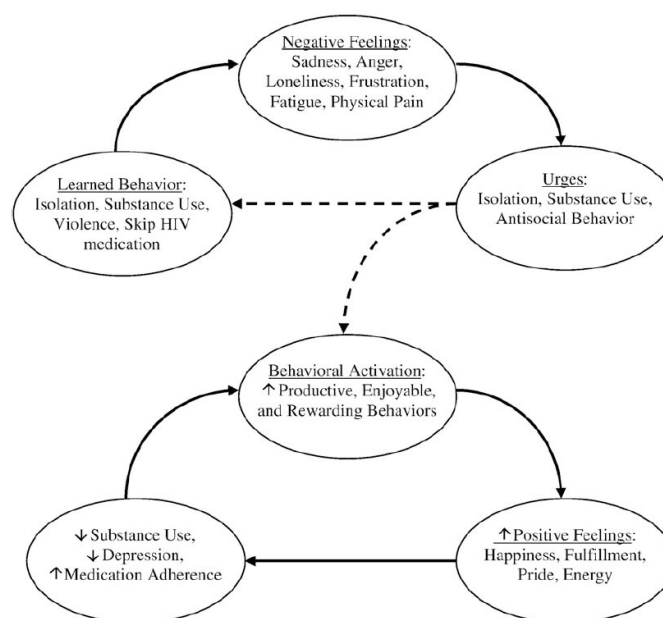


Figure 1. Behavioral activation treatment rationale for depressed HIV-positive substance users.

Table 1**ACT HEALTHY Schedule of Session Content*****Session 1: Introduction to BA and Life-Steps***

- Treatment rationale
- Life-Steps
- Introduce self-monitoring of current activities and daily mood ratings
- Planned Relaxation *

Session 2: Life Values and Goals

- Review self-monitoring and daily mood ratings
- Discuss Life-Steps and past days' medication adherence *
- Discuss treatment rationale *
- Introduce and develop individual life values and goals

Session 3: Identifying Activities and Contracts

- Review self-monitoring and daily mood ratings
- Activity identification for life areas and goals
- Introduce behavioral contracts

Session 4: Daily and Weekly Goals

- Review self-monitoring and daily mood ratings
- Review behavioral contracts
- Introduce daily and weekly goals exercise

Sessions 5-8: Monitoring Progress, Post-Residential Treatment Planning

- Review daily and weekly goals
- Integrate new activities into daily and weekly goals
- Discuss postresidential substance abuse treatment goals and activities

Outpatient Sessions 9-16

- Review daily and weekly goals, posttreatment contracts
- Revisit life areas and goals
- Integrate new activities into daily and weekly goals

* Denotes repetition of activity in all subsequent sessions.

Case series data for ACT HEALTHY

Table 2

	Baseline			Residential Discharge			Outpatient Discharge			1-Month FU			3 Month FU		
	C1	C2	C3	C1	C2	C3	C1	C2	C3	C1	C2	C3	C1	C2	C3
<i>Depression</i>															
DSM-IV-TR Diagnosis	MDD	MDD	MDD	PR	PR	PR	R	R	*	R	*	*	R	*	*
HAMD-7	6	8	17	0	1	8	0	1	*	0	*	*	1	*	*
BDI	32	12	13	10	1	8	2	0	*	1	*	*	3	*	*
<i>Activity Level and Reward</i>															
EROS	21	28	19	32	25	24	35	25	*	36	*	*	37	*	*
BADS	40	66	70	90	78	65	84	120	*	91	*	*	97	*	*
<i>Physical and Mental Health</i>															
SF-36 PCS	38	63	23	96	85	23	91	87	*	88	*	*	89	*	*
SF-36 MCS	31	55	22	80	95	18	78	96	*	88	*	*	91	*	*
<i>Substance Use</i>									*		*	*		*	*
Urinalysis	N	N	N	N	N	N	N	N	*	N	*	*	N	*	*
<i>HIV Medication Adherence</i>															
ACTG	PW	PM	N/A	100%	100%	75%	100%	100%	*	100%	*	*	100%	*	*

Notes. C=Case, N/A=Not Assessed; MDD=Major Depressive Disorder, PR=Partial Remission, R=Remission; ACTG: PW=Missed dose in the past week, PM=Missed dose in the past month, %=doses adherent in past 4 days; SF-36 scores rounded to the nearest whole number; N=Negative Urine Drug Test;

* Denotes data lost to follow-up.