



Published in final edited form as:

*Am J Addict.* 2006 ; 15(Suppl): 126–130.

## Cognitive Behavioral Treatment for Suicidal Alcohol Abusing Adolescents: Development and Pilot Testing

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### Abstract

The purpose of this study was to pilot a cognitive behavioral treatment protocol for adolescents with co-occurring alcohol use disorder and suicidality, examine its association with symptomatic improvement, and determine its feasibility and acceptability. Treatment consisted of a 6 month acute treatment phase, 3 month maintenance phase, and a 3 month booster phase, as well as case management services. Participants were also permitted to receive concurrent pharmacotherapy. Five of six families completed the protocol. Measures of alcohol use and suicidality were collected at intake, end of acute treatment, and post-treatment. Decreases in alcohol use and suicidal ideation were reported for all participants. Two of the five participants, both with a prior history of suicide attempts, re-attempted during the course of the protocol. Both were maintained in the study and improved over the subsequent portion of the treatment. A high retention rate, strong therapeutic alliance ratings, and low perceived treatment obstacles provide support for the feasibility and acceptability of this intervention. Preliminary results suggest that integrated outpatient cognitive behavioral treatment for alcohol abusing suicidal adolescents is feasible, acceptable, and associated with symptomatic improvement.

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The odds of experiencing suicidal ideation and/or suicide attempts are approximately 3 times greater among adolescents with alcohol dependence in comparison to those without.<sup>1,2</sup> The odds of completed suicide are 5 to 13 times greater among adolescents diagnosed with an alcohol/illicit substance use disorder.<sup>3</sup> Given the association between alcohol use disorders and suicidality, interventions geared at treating these co-occurring conditions in youth are needed.

Randomized studies have not been published to date to examine the efficacy of an integrated intervention for adolescents with co-occurring alcohol use disorder and suicidality. Cognitive behavioral therapy may be particularly effective for this population as it can be used to target cognitive distortions and common skill deficits that underlie adolescent alcohol abuse and suicidality. Only six randomized clinical trials have been published to examine behavioral/cognitive-behavioral treatment for adolescent substance abuse in general<sup>4–9</sup> and two to examine the efficacy of cognitive behavioral treatment of adolescent suicidality.<sup>10,11</sup>

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Special thanks to project staff Shirley Yen, PhD, Kathryn Herzig, BA, Melissa Kay, BA, and Aviva Buchman, BFA.

This project was supported by a grant from the American Foundation for Suicide Prevention, New York, NY and by grant AA014191 from the National Institute on Alcohol Abuse and Alcoholism, Bethesda, Md (Dr. Esposito-Smythers).

Although these studies yielded reductions in substance use and suicidality, respectively, each either excluded or failed to incorporate treatment of the other condition.

The purpose of this study was to pilot an integrative cognitive behavioral outpatient intervention for adolescents with co-occurring alcohol use disorder and suicidality. Treatment included predominantly individual therapy, with conjoint family sessions, delivered over the course of one year. This was a Stage I treatment development study.<sup>12</sup> Thus, we sought to determine the feasibility and acceptability of this intervention as assessed through adolescent and parent perceptions of treatment demands, therapeutic alliance, and attrition rates. We also examined the extent to which the treatment yielded reductions in alcohol use and suicidal ideation.

## METHOD

### Participants

Participants included five white females and one white male (mean age = 15, SD = 1.0). Five participants were recruited from an adolescent psychiatric inpatient unit and one through a referral from a study participant. Pre-treatment diagnoses and suicide history for participants can be seen in Table 1. Total family income was evenly distributed with one family earning less than 10,000, three between 40–50,000, one between 70–80,000, and one over 100,000 per year.

### Therapists

Three of the participants were treated by the first author, a licensed clinical psychologist with three years of postdoctoral experience at the time of the study. The other three participants were treated by a female master's level clinician with two years of clinical experience.

### Dependent Measures

**Assessment Measures**—Diagnoses were made using the Schedule for Affective Disorders and Schizophrenia for School-Age Children (K-SADS-PL).<sup>13</sup> The Kaufman Brief Intelligence Test (K-BIT)<sup>14</sup> was used to obtain a brief IQ estimate. Alcohol and marijuana use was assessed using the 90-day Timeline Followback.<sup>15,16</sup> Suicidal ideation was assessed using the Suicidal Ideation Questionnaire (senior high school version).<sup>17</sup> Treatment acceptability/feasibility measures included the parent-rated Barriers to Treatment Participation Scale,<sup>18</sup> the adolescent rated Working Alliance Inventory–Short Form,<sup>19</sup> as well as treatment retention.

**Treatment Adherence**—Adherence checklists were developed by the study investigators. As the number of items varied per session (10–17), full adherence to 80% of items in any session was denoted as acceptable. Therapists completed adherence checklists at the end of every session. Sessions were audiotaped and portions reviewed during weekly supervision meetings.

### Procedure

Adolescents admitted to a psychiatric inpatient unit for suicidal ideation or a suicide attempt and met criteria for alcohol abuse or dependence were eligible for participation.

One participant from the community with suicidal ideation and alcohol dependence was also included. Exclusion criteria included an IQ <70 and DSM-IV dependence on substances other than alcohol or cannabis. The parents/guardians of adolescents were told about the study by inpatient treatment staff. Names of those interested were provided to project staff. If parental consent and adolescent assent were provided, the family was enrolled in the study for their

outpatient care at no cost. A similar procedure was used for the participant from the community except the guardian contacted project staff to enroll their adolescent.

Participants and their parent/guardian completed a baseline assessment as well as 6 month (end of acute treatment) and 12 month (end of booster treatment) post-treatment initiation follow-ups. A bachelor level research assistant administered the assessment battery with the exception of the K-SADS-PL which was administered by the first author. Participants and their parent/guardian were compensated for completing their follow-up evaluations. This study was approved by the affiliated University and Hospital Institutional Review Boards.

**Cognitive-Behavioral Treatment Protocol (CBT)**—The CBT manual was developed by modifying and integrating modules from skills-based treatments for suicide attempters<sup>10</sup> and alcohol dependence,<sup>20</sup> and creating additional modules to address other co-occurring problems (e.g., non-suicidal self-injurious behavior). The full treatment protocol included acute, maintenance, and booster treatment phases delivered over the course of one year. The acute treatment phase included weekly individual adolescent sessions delivered over the first six months. The maintenance phase included bi-weekly sessions over the next three months. The booster phase included 3 monthly sessions. All individual sessions were scheduled for 60 minutes and family sessions 60 to 90 minutes. Case management calls were made to parents, adolescents, school officials, and agencies (e.g., social services, juvenile court) as needed.

All sessions had common components, including assessment of suicidality and alcohol use, review of previous week events and medication adherence, review of homework, skill introduction and practice, homework assignment, and a brief parent “check-in.” There was a menu of sessions to choose from and any sessions could be repeated if deemed necessary. This menu included modules that employ problem-solving, cognitive restructuring, and affect regulation techniques designed to address thoughts, feelings, and behaviors specifically associated with alcohol use and suicidality. Further, a motivational interview was employed at the beginning of treatment to help improve motivation to reduce substance use and improve treatment readiness. All alcohol and suicide specific sessions were administered during the acute phase of treatment. Sessions that tapped co-occurring problems were only administered if they were viewed as a contributing factor to alcohol use and/or suicidality. This relatively flexible format allowed for tailoring to individual treatment needs. Maintenance and Booster treatment sessions focused on skill generalization and relapse prevention.

## RESULTS

### Treatment Feasibility/Acceptability

**Adherence**—Adherence checklists completed by the study therapists suggested that, on average, therapists adhered to 99% of the session protocol (range of 92% to 100%).

**Retention**—Five out of six participants completed all phases of treatment. One participant was withdrawn by study investigators within the first month due to an unsafe home environment and need for a higher level of supervised clinical care (i.e., residential). Follow-up data was not collected for this participant. The treatment allotted a total of 33 sessions, of which at least three had to be family sessions. The five adolescents who completed treatment attended an average of 31.2 individual sessions (range of 25–38) and 8.6 family sessions (range of 3–12).

**Alliance/Obstacles**—The mean for the Working Alliance Inventory total score was 6.2 (SD = 1.3) at six month follow-up. With a possible range of 1 (never) to 7 (always), results suggest that on average, participants “very often” agreed with their therapist on goals for treatment,

how to reach these goals, and developed a bond with the therapist. The mean total score for the Barriers to Treatment Participation Scale was 1.5 (SD = .25). With a possible range of 1 (never a problem) to 5 (very often a problem), results suggest that guardians on average reported that barriers to treatment were perceived as “never” to “to once in a while” a problem.

**Concurrent Treatment**—Participants were permitted to receive pharmacotherapy outside of the study. Medication regimens for each of the five participants were as follows: 1) an atypical anti-depressant; 2) an atypical antidepressant and an SSRI; 3) two SSRIs; 4) an antipsychotic; or 5) a mood stabilizer. Only one participant was fully adherent to his/her medication regimen.

Two participants entered treatment with a concurrent treatment provider, neither of whom delivered cognitive behavioral therapy. One family attended nine sessions of family therapy before terminating. The other received 22 sessions of in-home family support services through the state before they met their limit and were terminated. One participant was rehospitalized on an inpatient unit for nine days due to an overdose during the course of the study.

**Case Management**—Case management demands in this study were high due to problems in school prior to treatment (all five were failing), social services involvement (two were removed from their home in the first few weeks of treatment due to neglect), juvenile court involvement (one participant was arrested for possession), and family crises. Across all cases, therapists had a median of 42 telephone contacts (range of 39 to 62) over the course of one year.

**Pretreatment, Post-Acute Treatment, and End-of-Treatment**—Changes from baseline to 6 (end of acute treatment) and 12 (end of booster treatment) month follow-up in suicidality, alcohol, and marijuana use are presented in Table 2. All five participants reported reductions in suicidal ideation at 6 month follow-up with most reporting even greater reductions by 12 months. Two of the five participants, both with a prior history of suicide attempts, re-attempted during the course of the protocol. One participant was rehospitalized on a psychiatric inpatient unit during the 6th week of treatment after telling her psychiatrist that she had taken an overdose of Prozac and aspirin the previous night because she was angry at her mother for not allowing her to go the mall with friends. A second participant was seen in a local emergency department for an overdose on Prozac during the 32nd week of treatment following an incident of sexual molestation perpetrated by a cousin. She had her stomach pumped and was discharged home that same evening. Both were maintained in the study and improved over the subsequent duration of treatment. Four out of five participants reported reductions in alcohol and/or cannabis use by 6 month follow-up and all five reported reductions by 12 months.

## DISCUSSION

Results of this small open pilot trial suggest that out-patient cognitive behavioral therapy for suicidal substance abusing adolescents is feasible and acceptable to families. Retention and treatment attendance were excellent. Five out of 6 (83%) families completed a full 12 month course of treatment, attending an average of 31 individual and 9 family sessions. Parents/guardians reported few if any obstacles associated with participating in our treatment. Further, adolescents rated their relationship with their therapist to be very strong.

All five participants also reported reductions in suicidal ideation over the course of treatment. However, two of the five participants made a suicide attempt, both of whom were referred back to our treatment program after their attempt and subsequently improved. These two youth began the treatment with the highest suicidal ideation scores and had a history of suicide attempts

and non-suicidal self-injurious behavior. Prior research conducted with adolescent suicide attempters suggests that those with a history of non-suicidal self-injurious behavior demonstrate worse global psychiatric functioning, alcohol use histories, hopelessness, and reckless behavior than those without this history<sup>21</sup> and thus may be more difficult to treat.

All participants also reported reductions in number of drinking days, heavy drinking days, and days of cannabis use. Those youth who began the study with higher rates of alcohol use and cannabis use achieved and maintained the best substance-related outcomes. These youth may have been more willing to actively engage in skill acquisition due to their greater awareness of the negative outcomes resulting from regular alcohol and cannabis use. In contrast, adolescents in the early acquisition phase of substance use may have minimized the risks of continued use and thus were less motivated to acquire skills to reduce their substance use.

Overall, these preliminary results suggest that alcohol abusing suicidal adolescents can be effectively treated with this outpatient model as long as they have a parent/legal guardian present who is willing to participate in treatment and provide a safe home environment. Optimal treatment of these youth will also involve intensive case management, at least at the start of treatment, to address problematic systems issues (i.e., school, social services, juvenile court).

Our work with this population also suggests that parent training may be needed to further enhance treatment outcomes with suicidal substance abusing youth. Poor parenting skills and untreated parental psychopathology appeared to play a vital role in the adolescents' ability to acquire and sustain treatment gains. Moreover, adolescents in our study reported engaging in suicidal behavior and substance use, in part, as a means to cope with family conflict. They also used suicidal threats and behavior to manipulate their home environment. Future treatment research with this population would benefit from integrating parent training, with a focus on communication, monitoring, limit-setting, problem-solving, and mood management skills.

As this is an open pilot trial of one treatment without a control or comparison group, it cannot be concluded that improvements resulted from this intervention. A randomized controlled trial is needed to determine study efficacy. Further, the intervention did not include a controlled medication component. Thus, it cannot be determined whether medication contributed to any improvement.

It is premature to derive any major clinical implications for a pilot study. However, the treatment development process did provide preliminary evidence for the feasibility and acceptability of an integrated predominantly individual cognitive behavioral outpatient intervention for suicidal substance abusing youth.

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**TABLE 1**  
Demographic data, pre-treatment diagnoses, and suicide status at study entry

Teen	Age	Gender	VIQ/PIQ/FSIQ	Pre-treatment diagnoses	Suicide status
1	14	Female	80/70/72	AD, CD, MDD, SP, ADHD, COD	SA (1)
2	14	Female	94/96/94	DXOA, MDD, SP, ODD	SA (1)
3	15	Male	88/128/109	AD, CD, MDD, SP, CD	SI
4	16	Female	97/89/92	AD, CD, MDD, PD	SI
5	15	Female	98/111/105	AA, CA, MDD, SP, ADHD, COD	SA (5)
6	14	Female	79/84/80	AD, CD, MDD, SP, ODD	SA (3)

Note: VIQ = Verbal IQ estimate; PIQ = Performance IQ estimate; FSIQ = Full Scale IQ estimate; AD = Alcohol Dependence; AA = Alcohol Abuse; DXOA = Diagnostic Orphan for Alcohol Use Disorder; CD = Cannabis Dependence; CA = Cannabis Abuse; MDD = Major Depressive Disorder; SP = Social Phobia; PD = Panic Disorder; ADHD = Attention-Deficit/Hyperactivity Disorder; ODD = Oppositional Defiant Disorder; COD = Conduct Disorder; SA = Suicide Attempt; ( ) = # of Attempts at admission; SI = Suicidal Ideation.

**TABLE 2**  
Data from baseline and 6 and 12 months post-treatment initiation follow-ups

Teen	SIQ			TLFB-%DA			TLFB-%HDD			TLFB-%DC		
	0	6	12	0	6	12	0	6	12	0	6	12
1	159	86	72	12	01	01	12	00	00	100	01	04
2	60	28	3	11	02	00	11	01	00	00	01	00
3	113	28	34	10	13	06	02	03	00	38	12	08
4	47	30	16	31	01	01	30	00	01	18	01	04
5	122	76	39	07	02	04	03	01	03	10	08	06

Note: 0 = Baseline; 6 = 6 months post-treatment initiation (end of acute treatment); 12 = 12 months post-treatment initiation (end of booster treatment); SIQ = Suicidal Ideation Questionnaire; TLFB = 90 Day Timeline Followback; DA = % days used alcohol; HDD = % heavy drinking days; DC = % days used cannabis. Scores  $\geq 41$  on the SIQ are considered clinically significant.