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"That's Where the Arguments Come in": A Qualitative Analysis of Booster Sessions Following a Brief Intervention for Drug Use and Intimate Partner Violence in the Emergency Department

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ABSTRACT: Although booster phone calls have been used to enhance the impact of brief interventions in the emergency department, there has been less number of studies describing the content of these boosters. We conducted a qualitative analysis of booster calls occurring two weeks after an initial Web-based intervention for drug use and intimate partner violence (IPV) among women presenting for emergency care, with the objective of identifying the following: progress toward goals set during the initial emergency department visit, barriers to positive change, and additional resources and services needed in order to inform improvements in future booster sessions. The initial thematic framework was developed by summarizing codes by major themes and subthemes; the study team collaboratively decided on a final thematic framework. Eighteen participants completed the booster call. Most of them described a therapeutic purpose for their drug use. Altering the social milieu was the primary means of drug use change; this seemed to increase isolation of women already in abusive relationships. Women described IPV as interwoven with drug use. Participants identified challenges in attending substance use treatment service and domestic violence agencies. Women with substance use disorders and in abusive relationships face specific barriers to reducing drug use and to seeking help after a brief intervention.

KEYWORDS: drug use, substance use disorders, intimate partner violence

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Background

Brief interventions for substance use disorders have been studied in the emergency care setting for over 30 years. The logic behind placing brief interventions in the emergency department (ED) is threefold. First, the ED has unprecedented access to a large portion of the general population, many of whom do not follow-up consistently with primary care providers for screening and longitudinal follow-up of substance use problems.[1,2] Second, the population presenting to the ED has an unusually high prevalence of substance use, with an estimated 27% having unmet substance use treatment needs.[3] Third, the ED has the advantage of offering a window of time in which participants may be unusually receptive to messages related to health behaviors, ie, the *teachable moment*.

At the same time, the ED setting contains experimental and theoretical challenges to systematic screening for high-risk problems and delivery of brief interventions, including high volume of patients, high disease acuity, and the lack of training providers in addressing substance use disorders. Therefore, technology has been proposed as a practical means of identifying and screening for substance use.[4–7] Computer-based programs provide a feeling of anonymity and offer privacy, which may facilitate reporting of unhealthy behaviors and violence occurence.[5,8] They require little or no direct clinician involvement. They can be adapted in a wide variety of languages and cultures, use of audio, as well, allow interventions to include low-literacy individuals. They can deliver assessments and provide individualized feedback and recommendations for changing high-risk behaviors. An

intervention can be widely disseminated across clinical sites, while maintaining treatment fidelity. Furthermore, most ED patients use computers (91%) and access the Internet (71%), and the vast majority feels comfortable receiving technology-based health information.[9] However, particularly for sensitive topics, technology may not be able to provide the empathy needed and expected by participants.[10]

We developed a Web-based intervention to reduce drug use (including illicit drugs and misuse of prescription drugs) among female ED patients experiencing IPV. Drug use and IPV have a close and bidirectional relationship: drug use is a risk factor for the future occurrence of partner violence and the experience of violence predicts subsequent substance use.[11–14] In our formative work, women with these coexisting problems indicated that direct human contact was instrumental to their receptivity to an intervention and to their ability to feel understood and to receive advice.[15] Therefore, we included a 15- to 20-minute booster conversation occurring two weeks after the initial visit, during which a trained interventionist led the participant in an open-ended conversation around progress toward the goals established in the ED program. As one means of enhancing and extending the impact of the necessarily brief ED-based intervention, investigators have used booster sessions, consisting of in-person or – more typically – telephone contact with interventionists in the weeks after the initial ED visit. Boosters may provide a distinct and an active function that independently leads to change. The boosters offer an opportunity to take the motivations and goals identified in the initial visit and reinforce, refine, and delve more deeply into challenges and barriers than was possible in the ED; some researchers have even suggested that while the ED is the opportunistic setting to identify substance use, interventions may be done soon after the visit.[16]

The combination of an immediate Web-based intervention program and a booster phone call later was appealing on a number of levels. This approach allowed us to take full advantage of the teachable moment in a way that was not burdensome to clinicians, while still providing an in-depth person-to-person conversation at a time when the participant might still recall drug-related goal setting, but would be less likely to have a high cognitive burden from acute illness, new diagnosis, medications, and health-care instructions.[17–19]

Although boosters have come into frequent use in ED brief intervention studies, there has been little research or discussion focused on the boosters themselves to inform their design or content. This study is a qualitative analysis of these booster sessions. Objectives of this study were (1) to better understand the process of change after brief interventions, including how progress toward positive change was possible and the barriers in achieving goals set during the initial ED visit; and (2) to identify specific resources and services needed by this target population in order to refine the focus of booster sessions in future work and to be able to provide more tailored interventions, compared to brief interventions designed for the general population.

Methods

Setting and study population. Participants were recruited from the ED of a level I trauma center with more than 100,000 annual adult visits by an ethnically, racially, and socioeconomically diverse population. Research assistants (RAs) recruited study participant for 15 hours a day (8 am–11 pm), seven days a week, for a period of 14 weeks (June to August 2014). During recruitment shifts, RAs used a random number generator to select a random sample of rooms. Within this subset of patients, RAs reviewed the electronic medical record for basic demographic information and presenting complaint. English-speaking adult women aged 18–59 years, who presented for a reason other than drug use/intoxication or IPV, were invited to complete a "Women's Health Survey," self-administered on an iPad (Apple Inc.). The questionnaire included questions on drug use (NIDA Quick Screen) and IPV (WAST). The NIDA Quick Screen is the first question of the National Institute on Drug Abuse-Modified Alcohol, Smoking, and Substance Involvement Screening Test (NM-ASSIST) tool and, as a single item, has been shown to accurately identify drug use.[20] The WAST is a brief, eight-question screening instrument that measures physical, emotional, and sexual violence and has high specificity for IPV.[21,22] Those who completed the survey and reported any amount of drug use and any type of IPV within the past three months were eligible for the study. Eligible patients who provided informed consent were enrolled in the study. Participants were given headphones, a tablet computer, and a brief tutorial by an RA on navigating through the program.

Participants launched the program themselves and were automatically randomized to intervention or control groups by the software.

The BSAFER intervention. The BSAFER intervention is a brief (15-minute), one-session Web-based program, designed to be taken on a tablet-style computer during an ED visit. An overview of the structure and content of the intervention is provided in Table 1. BSAFER was created using the Computerized Intervention Authoring Software (CIAS; Interva, Inc).[23] The program uses a female parrot avatar ("Polly"), who addresses the participant by name, serves as a guide and narrator for the program, and reads all content aloud, allowing low-literacy participants to complete the program.

The intervention included a booster session conducted by phone within two weeks after the initial ED visit. The booster conversation was manual driven, delivered by a motivational interviewing (MI) trained RA, and consisted of (1) review of core values and drug use goals established at baseline, (2) discussion of current drug use, (3) discussion of any discrepancy between goals and motivators and current drug use, (4) discussion of barriers to achieving goals and problem

Table 1. Participant characteristics.

SID	DRUG USE (COMBINED SELF REPORT AND HAIR SAMPLE)	BINGE ALCOHOL USE?	RACE/ETHNICITY	AGE	#CHILDREN
S1	Marijuana + cocaine	Y	Black	43	5
S2	Marijuana	N	AIAN	32	2
S3	Marijuana + stimulants	Y	N/A	N/A	N/A
S4	Marijuana	Y	Black	19	0
S5	Marijuana + cocaine	N	Black	18	0
S6	Marijuana + cocaine	Y	Black	45	3
S7	Marijuana	N	White	25	0
S8	Marijuana	Y	"Other"	25	2
S9	Marijuana, cocaine, opiates	Y	White	38	0
S10	Marijuana	N	White	32	1
S11	Marijuana	N	AIAN, White, Black	21	0
S12	Marijuana	N/A	Black	26	4
S13	Marijuana	Y	Black	19	0
S14	Marijuana, cocaine	Y	Other/Hispanic	38	4
S15	Marijuana, cocaine	Y	Black	25	1
S16	Marijuana	N/A	Black	47	3
S17	Marijuana, cocaine	Y	Other/Hispanic	41	5
S18	Cocaine	Y	AIAN	47	4

Abbreviation: AIAN, American Indian and Alaska Native.

solving, (5) reinforcement of SUD treatment services and IPV resources, and (6) reinforcement and encouragement of substance use change goals. The booster manual is included as Appendix A. During the booster, we allowed women to discuss any drug or alcohol use that they wished to focus on.

Participants in the control group completed a Web-based educational program about improving home fire safety while in the ED and a two-week booster phone call reviewing key educational points related to home fire safety. In conclusion, all participants of the program were scheduled for the booster session to take place within two weeks of the index ED visit. The study complied with the principles of the Declaration of Helsinki. The institutional review board of the participating hospital approved all study procedures.

Data collection and data analysis. Booster discussions with the intervention group were captured on digital audio recording software, transcribed into text verbatim, and entered into qualitative data management software (NVivo). Each interview transcript was reviewed at least once before analysis began. Subsequent reviews of the text identified themes. Initial codes were based on the framework of major topical headings in the interview guide. The coding structure was refined iteratively by coding initial transcripts, identifying additional codes through group discussion, and modifying and refining existing codes. Research team members reevaluated coding categories routinely to ensure that each coder had the same understanding of the codes and to identify any needed revisions or clarifications of the coding scheme. The final coding classification scheme was applied to each transcript by two independent coders. Any discrepancies or ambiguities were resolved through discussion. An integrated set of codes, consisting of all mutually agreed-upon codes, were entered into the NVivo database with the final version of each transcript. After coding all transcripts in this manner, an initial thematic framework was developed by summarizing codes by major themes and subthemes. We also examined the data stratified by the type of drug use (marijuana only vs. other illicit drugs). The study team, comprising experts in IPV and substance use interventions and qualitative research methods, met collaboratively to decide on a final thematic framework and to select illustrative quotes, representing the full range of responses relevant to each theme. Once themes and subthemes were finalized, the team discussed the potential implications of each to future booster design.

Results

In total, 863 patients were invited for the screening survey, of which 655 (76%) completed the survey, 68 (10%) were eligible for the study based on screening results and were invited to participate in the study, 40 (59%) provided consent and were enrolled in the study, in which 19 were randomized to control and 21 were randomized to the intervention. Of the 40 study participants, 30 (75%) completed the two-week booster phone call. The average age of the booster participants was 32 years and 77% of them were non-White. Marijuana

Table 2. Summary of themes and subthemes.

Theme 1. Drug use described as necessary for physical and mental health symptoms, rather than for enjoyment. **Subtheme 1.1:** Marijuana use in particular seen as benign: not unhealthy and without negative effects on core values.
Theme 2: Participants were not always consistent in standing behind the initial "core value" selected during ED portion of intervention, and sometimes could not recall identifying it.
Theme 3: The most successful drug use reduction strategy seemed to be taking self out of drug-using milieu. However, this seemed to leave the participants with a diminishingly small social circle, potentially leaving them with their best or only support as their partner. **Subtheme 3.1:** In fact, partners were occasionally described as a source of support and inspiration for drug use change. This was true even when drugs were described as a source of stress within the relationship. **Subtheme 3.2:** Other effective strategies endorsed by participants included reminding one's self about negative consequences or near misses related to drug use; finding other ways to cope with stress/anxiety; and prayer.
Theme 4: Entering a formal substance use treatment program was described as difficult for many of the women, whether because of psychological or logistical barriers.
Theme 5: Many women expressed reluctance reaching out to domestic violence agencies.

was the most common drug used by study participants; other drugs used were cocaine, stimulants, and opiates. A total of 45% of participants reported intimate partner physical abuse and 33% reported severe combined intimate partner physical and sexual abuse. The characteristics of the participants are presented in Table 2.

Theme 1. In identifying reasons for ongoing drug use, women described their use as necessary for physical and mental health symptoms, rather than for enjoyment. In fact, feeling *high* or *loopy*, was viewed as a negative side effect of their drug use.

S2: Um, usually, like, just before I go to bed. Um, help me relax and help my mind relax 'cause normally–it's like my mind is racing. Um, I have bipolar.

S4: Just to put me to sleep and calm all my nerves and stop thinking.

S7: Um, well, I have anxiety so it kinda–it helps with the anxiety and it helps with panic attacks. At least, I feel that it helps me. Especially, like, around people that I don't know–it's not like I do it all the time–I never have it on me. But, um, sometimes it definitely helps panic attacks because I've had anxiety for a long time.

S9: If I'm feeling, like, incredibly stressed and my meds aren't working and it's, like, okay, I–I feel like nothing is working so I try that … it makes me feel like I'm not coming out of my skin. My anxiety gets so bad sometimes that it literally feels like my skin is, like, jumping.

S10: So, um, in my opinion, I know that I need to, like, apply for my license 'cause, like, I think I would be eligible to get a license to use it. But, um, you know, at this time I don't have a license. It takes away a lot of my pain. It relaxes my muscle spasms and, um, it helps me go to sleep … I think that it's helping me to, um, you know, relax, calm down, relieve my pain and feel better just for the last hour of the day before I go to sleep.

S16: I have a lot of chronic fatigue, I have a lot of stiffness, joint pain, everything and um, the marijuana just calms everything down. To me, it's like a muscle relaxation, just my mood and everything it heightens me, basically like in a positive way … Like um like it takes away a lot of my depression cause I do suffer from depression and stress, you know.

INTERVENTIONIST: *Ok. Um so, what – tell me what don't you like about using marijuana?*

S12: Um, just a little bit of like sometimes depending on what, like, what kind it is, just – uh- the whole like "high" feeling … I just don't want the–the whole loopy feeling with it … I know they've been working on stuff like that for like cancer patients and things like that, like, to help out. To give them the full benefits of the cannabis but just without so much of the "high."

Subtheme: In the analysis stratified by type of drug use, we noted one finding that marijuana use, in particular, was seen as benign. Participants did not view it as dangerous to their health or as having negative effects on their children or any other core values.

S7: Um, well, I think that marijuana, there isn't any risks to it … I've been with somebody who was a drug addict … And I know–I just see what it does to other people so–that's why I've never chose anything else besides marijuana.

S10: I don't think it's really affecting, um, my ability or–I don't think it would, like, compromise, you know, my effectiveness as far as parenting.

S4: [Marijuana use] is one of the things I feel like is working.

INTERVENTIONIST: *What would it take to get you to start thinking about making a change in your marijuana use?*

S5: What would make me change? If it was unhealthy.

Theme 2. Participants were not always consistent in standing behind the initial *core value* selected during ED portion of intervention (and presented to them during the booster), and sometimes could not recall identifying it. Many of the participants did discuss values that motivated them, however, and even when these motivators were discrepant with what they had initially selected, they were generally consistent with one

of the original eight core values mentioned during the intervention (Table 1).

INTERVENTIONIST: *In the ER, one of the things we asked you is we asked you to pick a value that would be your priority value, something that's important to you in your life … You said that your priority value was your children. Tell me more about that.*

S1: Value? I don't really value my children. I don't know why I would say that. [This participant described frequent arguments with her teenaged daughter.]

S6: [Using drugs] does make me very sleepy. There was an incident where my daughter had an emergency–I didn't hear my phone ringing so I missed a call. And that was because I smoked … that right there kinda like crushed my heart that I wasn't there for my daughter.

S14: I can't smoke weed and serve food. I can't do that… That real unprofessional.

INTERVENTIONIST: *Is there any particular reason why you find yourself not using marijuana as much lately?*

S8: I just figured, like, I have to pay more attention to my kids and I have to stop that … It's, like, if they grow up … I wouldn't want–like, myself, like, I used to do it to sleep–I wouldn't want me to get addicted to it and my kids actually growing up and get to see me smoking. So that's why I stopped.

S11: And I can't, you know, keep that habit and then try to expect to help me when I'm focused on another goal, like maintaining a healthy body weight. It's just–those two don't go together.

S3: If I'm stressed over a certain bill–let's say, like, my light bill. Like, oh my god, I have a bill, my lights are gonna get cut off! … And I smoke a blunt and it's like, I forget about it for a while but reality is, it's still there, you know? You know, when your high comes down, it's like your lights are still getting cut off. It doesn't matter how much you smoke or what you do, it's just–you gotta handle that before anything else. And that's where it leads to, like, paying for marijuana and paying for bill. Kinda makes sense to stop smoking and pay for everything else.

Theme 3. The most successful strategy for meeting drug use goals established during the intervention seemed to be taking one's self out of the drug-using milieu. In some cases, this seemed to result in relative social isolation.

S6: I just–I've been kinda, like, taking myself out of situations where I know I would smoke. And that's–so, like, on weekends, instead of going to a friend's house, I'll go to the gym.

S1: You know what you can handle and what you can't handle because I know I couldn't be around somebody. If I'm, like, doing cocaine–I don't hang around people like that because that would trigger me.

S11: … you know, [drug use] is something I do with my friends but I actually have cut it down. I've only been smoking on the weekends now and less often–well, not at all during the week but not as often during the week.

INTERVENTIONIST: *That's great! How's it been going so far?*

S11: It's fine. I just find something else to do like watch movies or just hang out with friends who don't particularly partake in that hobby as often.

INTERVENTIONIST: *We asked you in the ER how ready you were feeling to think about making a change in, in using drugs in using marijuana, cocaine, and other things like that. And you said that's something you were already trying to change, something you've already been working on … Tell me a little bit about that.*

S17: Um, just staying away from the, from the wrong people and just keeping myself more to myself and just trying to keep a positive attitude. … It's been actually going good they actually caught the message and, just don't come by looking for me anymore. Because even if I'm home, I just tell my kids or whoever's in the house what if I'm not home … just losing a certain, of my friends 'cause they didn't want to join that little trail that I wanted to go on … I can deal with what I have to deal with but I've lost a couple of good friends over it. So, that was friggin' hard.

Subtheme 3.1. Partners were occasionally described as a source of support and inspiration for drug use change. This was true even when drugs were described as a source of stress within the relationship.

INTERVENTIONIST: *Do you have anyone in your life, whether it be friends or family members who are able to support you in this goal of cutting back a little bit?*

S14, describing support from partner: Yes, my boyfriend. He's in a program actually. … He was smoking a lot of weed, and it was clouding his mind. He was making bad decisions, you know? … he put himself in a program to better himself, and he's been there 30 days. He's been there before, but he went back, you know, to show me how much he loves me and how much he's sorry. You know, he doesn't want that poison in his body.

S14, describing tension related to drug use between her and partner: Um, when it's time to pay, that's where-that's where the arguments come in. "I'm not buying it, you're going to buy it …" and I'm telling him, we don't need to smoke. That's what it leads to, arguments.

S18: my boyfriend, he's a deacon, and I'm trying to get back and–we're together still, we've been together 20 years–but he just stopped using, too, and stuff.

Theme 4. Entering a formal substance use treatment program was described as difficult for many of the women, whether because of psychological or logistical barriers. More comfortable options seemed to be individual mental health counseling not specific to treatment of substance use disorders or attending a substance use treatment session to support someone else (ie, a friend or family member attending NA meetings) and deriving benefit.

S13: I'm just really not the type of person to like go to a program for it or something … I don't know, it's just embarrassing.

INTERVENTIONIST: *What made you stop going to counseling?*

S1: Because I was living in [city] so I had to go way out somewhere and, you know, if I didn't have a ride, I couldn't get there.

S6: one of my daughters–she had a really bad alcohol problem and she actually–she's in a, um, [pause] um, a rehab place. And we do do family counseling and even though it's helping her, it's helping me as well.

INTERVENTIONIST: *Yeah, have you ever gone to any of those? AA or NA meetings?*

S14: Oh yes! I go with my boyfriend to support him.

INTERVENTIONIST: *That's awesome.*

S14: And I get to learn at the same time, and it makes me feel so good.

Theme 5. Similarly, many women expressed barriers to reaching out to domestic violence agencies. Those approaching the agencies for the first time felt uncomfortable or scared, while those who had previously used these services described feeling dissatisfied with various aspects of the agencies, including the environment of the shelters, the ability of the agencies to address a broad range of needs, and interactions with volunteers without personal experience with IPV.

S1: Well, I'm a little skeptical about [contacting a DV agency]. I say, yeah, I'ma do it. But then I don't. I'm gonna do it. But then I don't. But it stays in my head.

INTERVENTIONIST: *What makes you skeptical about it?*

S1: Um. I don't know. I guess going for the first time. I don't know. Just weird and stuff.

INTERVENTIONIST: *How was that experience, working with [domestic violence agencies]?*

S2: It was scary at first. And–but–they reassured me that everything was going to be okay and seeing that things were actually going to be okay, I felt better.

S13: I mean on a scale from 1 to 10, I would say probably a 7 or 6 [in readiness to contact a domestic violence agency]

INTERVENTIONIST: *That's pretty good! That's pretty good, actually. [laughs] What would it take, do you think, to get you to like an 8 or a 9?*

S13: Knowing that I'm not going to get hurt.

INTERVENTIONIST: *Okay, so knowing that, um, it would be safe to contact a domestic violence agency?*

S13: Yeah … Feeling like I was safe and that, um, it will actually work in the long run.

S6: I didn't want to get other people involved so I did–I went to a couple therapy sessions and, like I said, just knowing that I wasn't in it alone, that helped me. But that was basically it–that I did get–I mean, they gave me pamphlets and hotlines and stuff and one time it was really bad where, at that point, I wasn't working. He was paying all the bills and I was trying to find a way out and I called and they basically turned me away. …

INTERVENTIONIST: *Was there anything that you did find helpful about seeking help from a domestic violence agency?*

S6: Um, I did go to, like, a group therapy session and just knowing at that time, when I was going through it, I didn't want to turn to my family. I didn't really want to turn to my friends. I was keeping a lot of it to myself but knowing that I wasn't the only one going through it. Knowing that it wasn't my fault, that it was something that was within the person, not within me.

S12: Oh, it was horrible! But, I mean, it was helpful for the fact that, like, you know, it was like another wake up call, you know, like look at where you're at, you have to hit this, you know? You're better than this. You could've did something else. How could I have gone about the situation different? Where can I go from now? But it was, I mean, some, not a lot of shelters, the people, is like the genuine help but it was horrible staying there. And then my kids kept getting sick and so but it was like, you know what? I'm gonna get out of here, you know.

INTERVENTIONIST: *Yeah*

S12: This is, I'm supposed to come here for help and I'm not really getting it, you know. So it – I don't know, I think a lot of the shelters–well, some of the shelters–two shelters I was in need to just like really step their game up and really be the women that are coming there that are looking for help 'cause that's what they need. Whether it's emotional help, financial help, housing help, you know, to get on their feet. Not just, you know–I don't know they make you feel like a prison and like when you was going in, they're checking your bags and stuff.

INTERVENTIONIST: *What would've been helpful to you [at the domestic violence agency]?*

S12: Just actually having somebody in there that's gonna listen and not just listen and do the "uh huh, uh huh … " No. Listen and be like, 'Wow, well here, let's go. I don't know what if, but we'll find it, we'll figure it out together. Let's find

some resources–let's, let's see what agencies out there that deal with this.'

S18: And they keep giving me these young advocates, these young people. Young girls, they're just beginning – they don't know what I've been through.

INTERVENTIONIST: *So you feel like maybe it would be more helpful to have someone who you felt like could relate to you a little bit more?*

S18: Yeah. That "been there." You know?

INTERVENTIONIST: *Mhmm.*

S18: You can't – you ain't never been there then don't come talk to me.

S18: Well, for one minute they say "oh we're going to put you here" and they want to put you in the first shelter they see. You know? And don't even know if they have bed bugs or not–and then they only talk to you and then send you pamphlets. … That's not helping you.

Three-month acceptability and feasibility data and preliminary outcome data have been reported separately.[24]

Discussion

We sought to inform and improve future booster sessions used as a component of ED-based interventions for drug use among women experiencing IPV, with the ultimate goal of helping women with these coexisting problems to change their drug use behaviors in conjunction with help-seeking for IPV. ED and primary care brief interventions are *opportunistic*, meaning that they are incorporated into a visit that is intended for other reasons, often identifying clinically significant substance use that is not recognized by the patient. Because the visit could be the result of any kind of injury or illness, the participant is taking the intervention, setting substance use change goals, and receiving drug use and IPV resources during a time when they were also experiencing physical symptoms of their acute condition and receiving information related to their diagnosis. Therefore, a booster session has the appeal of not only extending the total contact time with the participant but also connecting with them to reinforce goals and motivations at a time when there are fewer distractions.

Our boosters demonstrated the significant challenges to changing drug use behavior in our population. Many of our participants described drug use as self-treatment for stress, anxiety, and depression, consistent with prior observations that women seem more likely to use drugs or alcohol to self-treat mental health disorders than men.[25–27] Chronic pain was also cited as a reason for drug use, a finding that was, again, not surprising for this population of women with significant histories of severe physical abuse. Overall, our booster conversations underscored the point that referrals to mental and physical health treatments must occur in conjunction with (in some cases, even take priority over) referrals to substance use treatment services.

Marijuana use was a particular challenge when encouraging behavior change in the booster. One participant stated that although she was not a registered medical marijuana user, she felt she would qualify for it due to pain, demonstrating how the change in marijuana's legal status may lead to a rationale for illegal use. Marijuana may have less in common with illegal drugs than with legal substances, like alcohol, which may change the most effective clinical approach to its use. The motivational interviewing framework depends on the participant to perceive some negative aspects of drug use, which may not be as easily done for marijuana as for other drugs, particularly if its social stigma and perceived harms are decreased, as is anticipated with increasing liberalization of marijuana policies nationwide.[28] For women who have experienced abuse, marijuana use may not be a target for behavior change in itself, but rather an indicator of underlying mental health treatment needs. Or, it may be that our approach to marijuana cannot be as simple as assuming that any use is bad – as we do for other illicit drugs, eg, cocaine – but rather, to identify threshold levels likely to be harmful – as is done for alcohol use – and target those who fall within a specific heavy use category for interventions. Future work will need to examine the effectiveness of different approaches to improving outcomes among women who are experiencing IPV and using only marijuana.

Motivational interviewing attempts to motivate change by helping individuals perceive discrepancy between where they are and where they want to be.[29] The BSAFER intervention approach to developing discrepancy was to identify core values and ask women to think about their drug use in the context of this value. While we did seem to have selected values that resonated with women, several did not recall choosing the initial core value (when reminded of it by the interventionist) and selected a different value during the booster session. While this discrepancy needs to be explored further, core values may not be a framework that patients relate to easily. It may be that this component of motivational interviewing is difficult to reproduce in a Web-based setting; it may be that the women had multiple competing values and had a hard time selecting a single one; or it may be an issue of language or presentation: further qualitative work with the target population may help to clarify why the *priority value* did not seem to connect with women as intended.

One of the most frequent strategies for reducing drug use described by our participants was to stay away from the social circles that facilitated drug use, retreating instead to their homes and families. While likely to be effective, this seemed to leave the participants with a diminishingly small social circle, potentially leaving them with their best or only support as their (potentially abusive) partner. Indeed, participants described partners both as reinforcing drug use recovery and a source of conflict around drug use and drug use change. Future interventions may place emphasis on enriching healthy social connections, not just avoiding drug-using circles or employing alternate behaviors.

Our participants described reluctance to follow-up with substance use treatment resources. Barriers seemed to be psychological factors like shame/embarrassment and logistical factors like program accessibility, both of which have been noted to be particular obstacles for women needing substance use treatment in prior studies.[30–32] In particular, women expressed the desire for interactions with peers who had experienced drug use. Participants described similar reactions for domestic violence resources, feeling hesitant to reach out to agencies for initial consultations. In contrast to substance use treatment programs, however, many women related disappointing experiences to domestic violence agencies, including interactions with younger and inexperienced staff. As ED brief interventions emphasize referrals, future referrals to domestic violence agencies may need to adjust expectations, as these agencies have been chronically underfunded, unable to address all of the complex needs of their clientele, and rely on volunteers, many of whom may not be the kind of peer advocates that our target population seemed to desire.[33,34] As with drug counseling, the connection to peers or peer counselors remains important to women. Connecting women to survivor networks, when available, may be particularly helpful.

Study Limitations

This study included a small number of participants and was conducted at a single ED, so may not apply to all women of this population. This study was a secondary analysis of boosters designed as part of an intervention, with a clinical function. Therefore, the interviews did not include as many probes or planned time to explore all topics in-depth as it would have if it were designed a priori as a qualitative study. Finally, while the follow-up rate was greater than 70%, it still excluded some of the women enrolled in the study so may be a biased sample of women most motivated to follow-up and to engage with the study team.

Conclusions

Recent work involving brief interventions for substance use in the ED has focused on specific subpopulations, such as those with HIV risk factors[35] or engaged in peer-to-peer youth violence;[36] it seems important to ensure that the boosters, likewise, are appropriately tailored to the target population. Our booster sessions for drug use among women experiencing IPV allowed us to gage participants' responses to intervention components, provided new insight into the challenges faced by women with coexisting substance use and IPV two weeks after an initial brief intervention, and gave us a sense of the factors affecting participants' ability to follow-up with referral services.

Our study contributed to the literature by demonstrating how traditional referrals dispensed from emergency care settings following brief interventions may be unrealistic for this population. Furthermore, typically effective strategies for changing substance use, such as changing the social milieu or seeking support from loved ones, may be complicated by the abusive intimate partner relationship, compounding the typical challenges faced by women with substance use disorders. Future interventions should be sensitive to this possibility. Further research is needed to determine the relative importance of specific barriers in reducing drug use and the best means of helping women to overcome them.

Author Contributions

Conceived and designed the experiments: EKC, KGuthrie, CZ, MJM. Analyzed the data: EKC, KGlerum, CT, KGuthrie. Wrote the first draft of the manuscript: EKC, KGlerum. Contributed to the writing of the manuscript: EKC, KGlerum, CT, KGuthrie, CZ, MJM. Agree with manuscript results and conclusions: EKC, KGlerum, CT, KGuthrie, CZ, MJM. Jointly developed the structure and arguments for the paper: EKC, KGuthrie, CZ, MJM. Made critical revisions and approved final version: EKC, KGlerum, CT, KGuthrie, CZ, MJM. All authors reviewed and approved of the final manuscript.

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Appendix A

Telephone Booster Session

I. Outline Purpose of Call/Discuss Safety and Confidentiality

a. My name is _____. I'm calling from _____ about the study you completed a couple of weeks ago in the Emergency Department *(a reference term may be used instead, if participant has asked for one).* It's important that you be able to talk privately and safely. Is now a good time? *(If not, ask participant for a better time to call and reschedule.)*

b. I'd like to go over with you some of your responses from the computer program that you completed in the ER and discuss how you're feeling now.

c. As always, you don't have to answer any questions that you don't want to answer. You're free to stop the conversation at any time or change topics, if you need to. This telephone session will be recorded. We will turn the audio recording into a written transcript and erase your name and any other information that could be used to identify you. Our conversation today is confidential. Only members of our research team will have access to the audio recording and the written transcript. I do want you to know that there are some cases in which we are obligated by law to report what you've told us, specifically if you mention thoughts of hurting yourself or others or any instances of child or elder abuse. Otherwise, everything you tell us is confidential. Do you have any questions?

d. If at any time in this conversation, you feel unsafe, let's pick a code word that is easy for you to remember that lets me know to hang up and call 911. What word would you like to use? _____. Where are you located, so that I know where to send help? If you use this word during our conversation today, I will hang up and call 911.

II. Intro

a. How are you doing today?

b. In the ED, you told us that you use [specific drug(s)]. Where does your use of [specific drug] fit in to your life? *If the participant is using several substances, ask them which one they're most interested in discussing today.*

c. What do you like about using [drug]?

d. What don't you like about it?

III. Priority Value

a. Just to remind you, in the ER, you selected _____ as your "priority value," a value that is important to you in your life. Tell me more about [your value]. Why is it important to you? *[You said that reducing your drug use would affect this value OR you did not think that reducing your drug use would affect this value. Tell me more about that.]*

IV. Review Readiness/Confidence to Change Drug/Alcohol Use

a. In the ER, you told us that you were [answer from intervention] in terms of how **ready** you are to make a change in your drug/alcohol use. How are you feeling **right now** about your readiness to change your drug/alcohol use? *[I have no interest in changing my drug/alcohol use, I am thinking about using drugs/alcohol less in the future, I have decided to use drugs/alcohol less and will start one day in the future, I have decided to use drugs/alcohol less and am ready to start today, I am already trying to change my drug/alcohol use]*

b. What, if anything, has changed in how ready you are to make a change?

c. What makes you [this ready]? *Discuss. Focus on the positives. If the participant says they're thinking about changing, ask what made them start to think about it. Reinforce participant's readiness.*

d. What would it take to get you more ready? *Discuss.* In the ER, you told us that you were [answer from intervention] in terms of your **confidence** in your ability to make a change in your drug/alcohol use. How confident are you **right now** in your ability to make a change in your drug/alcohol use? *[I have no confidence at all that I can change my drug use, I feel a little confident that I can change my drug use, I feel moderately confident that I can change my drug use, I feel very confident that I can change my drug use, I feel completely confident that I can change my drug use].*

e. What, if anything, has changed in how confident you are that you can make a change?

f. What makes you [this confident]? *Discuss.*

g. What would it take to get you [more confident]? *Discuss.*

V. Review Change Goals around Drug/Alcohol Use

a. When you completed the program in the ER, you said that you wanted to change *[remind the participant of what they wanted to change].* How is that going? How are you feeling now about this goal? Would like to set a new goal for yourself? *Discuss any progress they may or may not have made. Listen, reflect, and empathize with any challenges/barriers the participant may be facing. Offer encouragement/praise for any successes they have had.*

VI. Identify Facilitators/Barriers to Change

a. What has made it difficult for you to achieve your goal?

i. Tell me about a challenge you overcame in the past. How can you use the resources you used then to help you achieve this goal?

b. What has helped you to achieve your goal?

i. In the ER, you also identified _____ as a support person who could help you achieve your goal. Have you reached out to this person? How has this helped you?

ii. In the ER, you selected 3 healthier activities that you could do instead of using drugs/alcohol. You selected _____. Have you done any of these things since your visit? How has this helped you? How could you incorporate these or other activities into your daily routine?

iii. Have you sought out any resources in the community that can help you achieve your goal? *For example, finding an AA/NA meeting in their area or speaking with a counselor/doctor.* If so, what was helpful about that experience?

iv. **Linking substance use to partner abuse:** "I'm wondering how drug use affects your relationship…" "It sounds like you're really working on making changes in your life. Has that affected your relationship at all?"

VII. Review Readiness/Confidence Around Seeking Help from DV Agencies

a. Now I'd like to talk with you about something else you might remember from the computer program you took in the ED. When you completed the program, you said that you feel [answer from intervention] **ready** to seek help from domestic violence agencies to keep you safe as you pursue your drug use change goal.

b. How are you feeling **right now** about your readiness to seek help from domestic violence agencies to keep you safe?

[I have no interest in getting help from DV agencies, I am thinking about getting help from DV agencies, I have decided to get help from DV agencies one day in the future, I have decided to get help from DV agencies and am ready to start now, I am already getting help from DV agencies]

c. What, if anything, has changed?

d. What makes you [this ready]? *Discuss. Reinforce participant's readiness. Make note of reasons WHY participant selected the answer they did.*

e. What would it take to get you more ready? *Discuss.*

In the ER, you told us that you were [answer from intervention] in terms of your **confidence** in your ability to seek help from domestic violence agencies to keep you safe as you pursued your drug use change goal. How confident are you **right now** in your ability to seek help from DV agencies?

[I have no confidence at all that I can get help from domestic violence agencies, I feel a little confident that I can get help from domestic violence agencies, I feel moderately confident that I can get help from domestic violence agencies, I feel very confident that I can get help from domestic violence agencies, I feel completely confident that I can get help from domestic violence agencies]

f. What, if anything, has changed?

g. What makes you [this confident]? *Discuss.*

h. What would it take to get you [more confident]? *Discuss.*

VIII. *Ask participant to summarize in their own words any strategies/resources you've discussed that could help them in reaching their change goal.*

a. *If participant has difficulty with this, ask if you can help summarize for them.*

b. *Give the participant space to change their goal in light of anything that came up during the conversation.*

c. *For participants who DID NOT select a change goal because they were not ready to make a change, invite them to select a change goal now.*

IX. Reinforce Referrals. Interventionist will provide reminders of community resources for substance use, domestic violence and primary care. [just prep these so easy to rattle off – would say DV hotline and NA meetings and we can plug in their address into the SAMHSA tool to find the other treatment programs near them]

X. *Assessments.* *Confirm whether participant has chosen to complete the standard assessments via the web or over the phone. If the participant has chosen to complete them over the phone, transfer to RA who will be completing the* 2*-week assessments. If the participant has chosen to complete them via the web:*

We have a short questionnaire that we would like you to complete. In the Emergency Room, you told us that you'd feel safe completing these questions online on your own computer, smart phone, or tablet. Are you able to complete these questions NOW? Is there an email address that's safe that I can email your survey link to? The password you chose is _____.

If participant is unable to privately complete assessments via the web, she will be given the opportunity to have a research assistant complete the questions with her over the phone.

XI. Conclusion. *Thank the participant for their participation. Confirm the best way to reach the participant, schedule their next follow-up phone call, confirm the best way to send a reminder about their follow-up phone call (reminder text, email, letter without any specific mention of the study, or no reminder), ensuring participant feels that this is safe and private, and update* 2 *to* 3 *locators.*