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Refining a Personalized mHealth Intervention to Promote Medication Adherence among HIV+ Methamphetamine Users

Jessica L. Montoya, M.S.[1], **Shereen Georges**[2], **Amelia Poquette, B.S.**[2], **Colin A. Depp, Ph.D.**[2], **J. Hampton Atkinson, M.D.**[3,2], **David J. Moore, Ph.D.**[2], and **the Translational Methamphetamine AIDS Research Center (TMARC) Group**

[1]SDSU/UCSD Joint Doctoral Program in Clinical Psychology; San Diego, CA

[2]University of California, San Diego, School of Medicine, Department of Psychiatry; La Jolla, CA

[3]VA, San Diego Healthcare System, San Diego, CA 92161

Abstract

Mobile health (mHealth) interventions to promote antiretroviral therapy (ART) adherence have shown promise; however, among persons living with HIV who abuse methamphetamine (MA) effective tailoring of content to match the expressed needs of this patient population may be necessary. This study aimed: 1) to understand patient perspectives of barriers and facilitators of ART adherence among people with HIV who use MA, and 2) to obtain feedback on the thematic content of an mHealth intervention in order to tailor the intervention to this subgroup. Two separate focus groups, each with ten HIV+/MA+ individuals, were conducted. Transcribed audio recordings were qualitatively analyzed to identify emergent themes. Interrater reliability of themes was high (mean Kappa=.97). Adherence barriers included MA use, misguided beliefs about ART adherence, memory and planning difficulties, social barriers and perceived stigma, and mental heath issues. Facilitators of effective ART adherence were cognitive compensatory strategies, promotion of well being, health care supports, adherence education, and social support. Additionally, the focus groups generated content for reminder text messages to be used in the medication adherence intervention. This qualitative study demonstrates feasibility of using focus groups to derive patient-centered intervention content to address the health challenge at hand in targeted populations. Clinical Trial # NCT01317277

Keywords

Focus groups; methamphetamine; antiretroviral treatment; adherence; mHealth; short message service

Corresponding author: David J. Moore, PhD, HIV Neurobehavioral Research Program, 220 Dickinson Street, Suite B (8231), San Diego, CA 92103, Ph: 619-543-5093, Fax: 619-543-1235, djmoore@ucsd.edu.

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Introduction

Persons with HIV who use methamphetamine (HIV+/MA+) demonstrate poor adherence to antiretroviral therapy (ART) (Moore et al., 2012). Interventions aimed at improving ART adherence among HIV+/MA+ persons likely need to be tailored given multifaceted determinants of non-adherence, such as neurocognitive impairment (Rippeth et al., 2004), co-occurring psychiatric disorders (Chander, Himelhoch, & Moore, 2006), and marginal housing (Waldrop-Valverde & Valverde, 2005). Randomized controlled trials have demonstrated that short message service (SMS) is efficacious in enhancing ART adherence (Horvath, Azman, Kennedy, & Rutherford, 2012), and tailoring message content may further enhance the impact of SMS interventions (Coomes et al., 2012). This study's parent project examined the effectiveness of an SMS intervention to improve ART adherence among HIV+/MA+ persons in the U.S. The present qualitative sub-study aimed to understand patient perspectives of barriers to and facilitators of ART adherence in this group and to obtain feedback on the content of an SMS medication adherence intervention to match their expressed needs.

Method

Participants

Two focus groups, each with ten unique HIV+/MA+ individuals, were conducted in June 2011. Study participants were recruited from University of California, San Diego (UCSD) HIV Neurobehavioral Research Center (HNRC) and UCSD Translational Methamphetamine AIDS Research Center (TMARC) that receive referrals from HIV clinics and community support services. All participants had a confirmed diagnosis of HIV and most were in HIV care. Participants had a DSM-IV diagnosis of a MA use disorder and were in various stages of MA use/recovery (e.g., active daily users not in treatment to those in recovery). Approval for the study was obtained from the local Institutional Review Board. Each participant provided written informed consent and received monetary compensation ($20) and an onsite meal.

Individualized Texting for Adherence Building (iTAB)

One goal of the focus groups was to revise content of an existing adherence-promoting SMS intervention (i.e., iTAB) to match expressed needs of HIV+/MA+ persons. iTAB sends medication reminder texts according to a participant's medication regimen. In the original iTAB design, participants selected, modified, and/or created five text message reminder stems from a list of 25 predetermined stems covering five themes: 1) direct reminder, 2) celebration of health, 3) disease control, 4) empowerment, and 5) importance of adherence. The term "stem" indicated that these core components of the text messages were available to all participants whereas other components were personalized (e.g., name and time of reminder). An iTAB reminder text might read, "John, 2 help keep u feeling good, rmber 2 take ur meds. Take ur big blue pill now. Pls reply A) took D) didn't G) snooze."

Focus Group Procedure

Two focus groups, each 1.5 hours, with semi-overlapping discussion content were conducted. Additional focus groups were not conducted due to feasibility and fiscal constraints. Group moderators initiated discussion with predetermined questions and asked follow-up questions to elicit additional opinions. Group 1 discussed barriers and facilitators of ART adherence in the context of MA use. Group 2 similarly discussed adherence but focused primarily on soliciting feedback on the reminder text message stems of the iTAB intervention. Group discussion was audio taped and subsequently transcribed.

Data Analysis

Two investigators independently coded the transcripts based on emergent themes. Disagreements in description or assignment of codes were resolved by consensus and led to refinement of codes. The final coding structure was reviewed to determine level of agreement. Inter-rater reliability of 18 themes (5 adherence barriers, 5 adherence facilitators, and 8 thematic stems for reminder text messages) of 470 coded statements had a high inter-rater concordance (kappa=.97). Qualitative data analysis was performed using QSR International's NVivo9.

Results

The HIV+/MA+ participants were middle aged (43.6 years, SD=7.7), predominantly male (90%), Caucasian (60%), and high school educated (12.3 years; SD=2.8).

Barriers to Medication Adherence

Five thematic barriers to ART adherence were identified: 1) effects of MA use, 2) misguided beliefs about ART adherence, 3) memory and planning difficulties, 4) social barriers and stigma, and 5) mental heath issues (see Table 1). Participants discussed planned and unplanned ART non-adherence as a result of the effects of MA use. Planned non-adherence was related to reduced motivation to be ART adherent while using MA, such that participants reported skipping doses to retreat from reality, questioning the need for ART if engaging in other risky behavior, trading or selling medications for MA or money, and skipping doses because medications ruin one's MA high or interactions of MA and ART were unknown. Unplanned ART non-adherence included losing track of time while using MA, forgetting a dose, and lacking insight of HIV disease progression. In addition to the effects of MA, participants described holding misguided beliefs about medication adherence, such as fears of developing ART-resistant HIV viral strains if not 100% adherent, worries about accidentally taking a double dose of medication and the unknown possibility of a fatal overdose, and doubts about the need for ART if HIV disease indicators were in healthy ranges. Memory and planning difficulties included forgetting to take pills, forgetting if pills were already taken, and not packing medications when away from home. Social barriers and stigma linked to non-adherence involved feeling isolated or perceiving HIV-related stigma that led participants to hide and forget about their medication. Participants did not disclose specific psychiatric disorders but talked generally about the negative impact of mental health issues, such as "laziness" and "slow suicide" (i.e., contributing to death by neglecting health), on motivation to adhere to ART.

Facilitators of Medication Adherence

Five facilitators of ART of adherence were identified: 1) cognitive compensatory strategies, 2) promotion of well being, 3) health care supports, 4) adherence education, and 5) social support (see Table 1). Cognitive compensatory strategies included planning for changes in routine, carrying extra pills for emergencies, having medications visible, disguising medications as vitamins, and using watches or alarms. Participants indicated that promotion of well being (e.g., having a personal goal to take medications while actively using MA, adopting a proactive approach to breaking down HIV-related stigma, and maintaining spiritual well being) might facilitate adherence. Health care supports identified as facilitators included assistance received from pharmacies (e.g., pre-packed medications into organizers and delivery services), use of support medications to alleviate ART side effects, and regular contact with non-judgmental health care providers to review HIV disease indicators. Participants encouraged the use of incentives to promote adherence. Adherence education, including harm reduction programs, and social support (e.g., having a friend or nurse encourage adherence) were proposed as facilitators of adherence.

Content of Personalized Text-Messages to Promote Medication Adherence

Thematic stems proposed for use in the iTAB intervention were 1) social support and responsibility to others, 2) self-esteem, 3) dangers of non-adherence, 4) harm reduction focus, 5) direct reminder, 6) spirituality, 7) celebration of health, and 8) disease control (see Table 2). Social support and responsibility to others reminded participants of friends, children, and pets who motivate them to be ART adherent. The self-esteem theme was intended to make the recipient feel worthwhile. Some group members endorsed loss-framed text messages reminding the recipient of the dangers of non-adherence, whereas others recommended a harm reduction focus to encourage adherence without requiring change in MA use. The direct reminder theme was intended to plainly alert the recipient to take their medications. Participants noted a lack of a spirituality stem and encouraged its inclusion. Others preferred gain-framed messages as reminders to celebrate health by taking their medications to feel well. Lastly, the disease control theme focused on reiterating the importance of managing one’s health.

Discussion

Focus groups informed the refinement of an mHealth intervention to promote ART adherence among a subgroup of HIV+ persons with higher rates of, or at risk for, non-adherence. Consistent with prior reports (Reback, Larkins, & Shoptaw, 2003), participants unanimously expressed that MA use negatively impacted ART adherence. The barriers and the facilitators of ART adherence were idiosyncratic among participants, indicating the appropriateness of a tailored intervention.

Participants unanimously expressed difficulty with ART adherence in the context of MA use, such as ignoring reality, prioritizing MA use over adherence, questioning the need for ART, and lacking insight regarding the progression of HIV. Group feedback on the mHealth intervention highlighted preferences for gain-framed (i.e., adhering to ART will improve health) for some, while others preferred loss-framed messages (i.e., not adhering to ART

will lead to severe health consequences). Recommendations for thematic content were incorporated into the intervention (e.g., inclusion of a spiritual theme) to match these expressed preferences.

There are several limitations of the current study. While qualitative studies generally have small sample sizes, multiple focus groups are preferable for the identification of themes until saturation is reached and no additional themes emerge. Our cross-sectional design raises the possibility of a recall bias. Although participants were amenable to an adherence text-messaging intervention, only a randomized clinical trial can determine level of actual acceptance and impact of this approach.

Despite its limitations, this study supports patient-centered, tailored intervention strategies for engaging HIV+/MA+ persons. Further research might compare 1) non-tailored SMS systems to tailored systems, and 2) adherence interventions integrated with MA abuse treatment. Such research is strongly warranted as mobile technologies become further integrated into healthcare delivery.

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Table 1

Barriers to, and facilitators of, medication adherence for persons with HIV who use methamphetamine

Coded theme	Example of coded text
Barriers to ART adherence	
1. Effects of methamphetamine use	
a. Planned non-adherence	• "For me it's a choice. I decided not to take it [my medication] […] I knew from the very beginning, before I started getting high, I'm not going to take my meds today so that would not be a worry through the high, through the process. I'd just be like, my time, my party, and this is aside from all that."
	• "I see my meds, and I don't forget it. But it's like, do I take them and ruin my high? Screw it."
b. Unplanned non-adherence	• "My biggest problem was losing track of time, you know, and so I would have them, but I may take it, you know, 12 hours and then 36 hours and that kind of deal […] It was just very sloppy."
	• "Well, I'm always aware of the importance of taking my meds, but there is time when time gets lost, and at the end of the week or end of the month, you realize you sill have a lot of pills left!"
2. Misguided beliefs about medication adherence	• "And then they said, 'Well, if you miss one dose you are totally screwed,' and that message started coming across and that is when I decided I would stop taking them until I could get sober because I didn't want to become resistant."
3. Memory and Planning Difficulties	• "Just recently, I don't remember taking it [medication], but I'm scared to take it again. That was a really big deal for me."
4. Social barriers and stigma	• "There have been situations where I meet a guy online, wherever, and I tell them that I am [HIV] positive, and even when they come over […] I still don't feel comfortable having my meds next to my bed. I have to put them away. Even though you know, he knows, it's just I can't. One thing happens, we get busy or whatever, and then I just don't take them!"
5. Mental health issues	• "It's [adherence] also about the psych part – how I'm feeling, which is really important because my mental health has big problems for my adherence."
Facilitators of ART adherence	
1. Cognitive compensatory strategies	• "For me, what has been working well with my regimen is to have it at eye level on the counter like in the hallway when I go from the bedroom to the kitchen, and I don't forget. I know it's there. I just open the door and grab it. I don't need to search down or open other doors."
	• "I started carrying around an emergency thing with me in my backpack, so if I did forget it and I'm out and about and I'm not going to be home until 3 or 4 or whatever, it's already in there."
	• "I use my watch to remind me to take them at 10:00 at night. I take them at night because my meds make me nauseous."
	• "The way I do my meds – I do them at certain times, and I have them laid out, and if they're not laid out, I know I didn't take them, and, you know, if there's one there, then I knew I took that one. But, I have little containers that I put them in, so when I travel for that day or the next day or something, so I'll always have them with me."
2. Promotion of well being	• "I just wanted to prove to myself that I could take my meds and use at the same time."
3. Health care supports	• "I think it's important when a doctor provides you support medications, so when you are having diarrhea, nausea vomiting, you have access. It's really important to understand and help your side effects. Organizers are also terrific."

Coded theme	Example of coded text
	• "Regular contact with non-judgmental medical providers is very helpful."
	• "I think having somewhat regular appointments and having the blood work done is important because that was somewhat of an indicator when I wasn't taking my meds properly or when I had stopped. Where are my T cells at? What's going on with that? Once you drop below 100, you know, all of a sudden that has a whole set of possible problems and so that plays into my thinking."
4. Adherence education	• "You know, for me, the knowledge of knowing there are only six different types of drugs and once you burn one, you are really cutting your options. And it seems like a lot of people don't understand how that works."
5. Social support	• "I was thinking about taking meds and things like that – if we have something called the buddy system, or just maybe have one of the nurses giving you a call everyday, saying are you taking your meds?[…] If someone just asks you, 'Did you take your meds today,' and you say, 'Oh no, I forgot!" Now, you reminded them with a phone call."

Table 2

Thematic intervention reminders stems developed from participant feedback during focus groups, which the individualized texting for adherence building (iTAB) intervention tailored for persons who use methamphetamine

Theme	Participant Feedback during Focus Group	Intervention Reminder Text Message Stem
1. Social support and responsibility to others	"I don't have kids, so it's my dog. I'd do anything for my dog."	[name] needs u. Take ur… for them.
2. Self-esteem	"Well one thing is you got to make sure that you're making the person feel like they're someone because we all felt down and out."	U are special. Pls take ur…
3. Dangers on non-adherence	"Take them [your meds], or you die."	Not taking ur meds could make u resistant. Take ur…
4. Harm reduction focus	"It's [the text message reminder] almost got to be like, 'Oh, if it goes off, I take my meds; I get another shot of meth,' you know. Cuz you'll do it [take meds] if you're gonna get another shot of meth."	You can have fun and take ur meds. Time 4 ur…
5. Direct reminder	"I think it [the text message reminder] should say, 'Take your meds.' That's it! 'Take your meds.' It's gonna hit, and they're [the recipients] gonna know what it is. [It] shouldn't code or beat around the bush."	It's pill time! Take ur…
6. Spirituality	"A lot of us are religious, and I didn't see any kind of spiritual messages."	God grant me the serenity to do this. It's time 4 ur…
7. Celebration of health	"I like the one, 'To help keeping you feeling good.'"	2 help keep u feeling good, rmber 2 take ur…
8. Disease control	"It's important to take care of yourself."	Ur health is impt, rmbr 2 take ur meds. Take ur…