Reducing non-injection drug use in HIV primary care: A randomized trial of brief motivational interviewing, with and without HealthCall, a technology-based enhancement

Efrat Aharonovich [a,b,*], Aaron Sarvet [b], Malki Stohl [b], Don DesJarlais [c], Susan Tross [b,d], Teresa Hurst [e], Antonio Urbina [e], Deborah Hasin [a,b,f]

[a] Department of Psychiatry, Columbia University Medical Center, New York, NY, USA
[b] New York State Psychiatric Institute, New York, NY, USA
[c] Icahn School of Medicine, at Mount Sinai New York, New York, NY, USA
[d] HIV Center for Clinical and Behavioral Studies/Division of Gender, Sexuality and Health, Department of Psychiatry, Columbia University Medical Center, New York, NY, USA
[e] Institute for Advanced Medicine, Mount Sinai Health System, New York, NY, USA
[f] Department of Epidemiology, Mailman School of Public Health, Columbia University, New York, NY, USA

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ABSTRACT

Aims: In HIV-infected individuals, non-injection drug use (NIDU) compromises many health outcomes. In HIV primary care, the efficacy of brief motivational interviewing (MI) to reduce NIDU is unknown, and drug users may need greater intervention. We designed an enhancement to MI, HealthCall (HC), for daily patient self-monitoring calls to an interactive voice response (IVR) phone system, and provided participants with periodic personalized feedback. To reduce NIDU among HIV primary care patients, we compared the efficacy of MI + HealthCall to MI-only and an educational control condition.
Design: Participants age >18 with >4 days of NIDU during the prior 30 days were recruited from large urban HIV primary care clinics. Of the 240 participants, 83 were randomly assigned to control, 77 to MI-only, and 80 to MI + HC. Counselors provided educational control, MI-only or MI + HC at baseline. At 30 and 60 days (end-of-treatment), counselors briefly discussed drug use, moods and health behaviors, using HealthCall-generated graphs with MI + HC patients. Primary outcomes (last 30 days) were number of days used primary drug (NumDU), and total quantity of primary drug used (dollar amount spent; QuantU), derived from the Time-Line Follow-Back.
Findings: Across all groups, at end-of-treatment, frequency and quantity of NIDU decreased, with significantly greater reductions in the MI-Only group. A twelve-month post-treatment follow-up indicated sustained benefits of MI + HC and MI-only relative to control.
Conclusions: Brief interventions can be successfully used to reduce non-injection drug use in HIV primary care. IVR-based technology may not be sufficiently engaging to be effective. Future studies should investigate mobile technology to deliver a more engaging version of HealthCall to diverse substance abusing populations.

1. Introduction

HIV infection is highly prevalent among non-injection cocaine and heroin users in the US (Des Jarlais et al., 2014; Keen, Khan, Clifford, Harrell, & Latimer, 2014; Mitchell & Latimer, 2009). In HIV patients, non-injection drug use (NIDU) is associated with multiple adverse outcomes, including shortened survival (Carrico et al., 2007; Colfax & Guzman, 2006; Cook et al., 2008; Kapadia et al., 2005; Lucas et al., 2006), worse prognosis due to poor antiretroviral medication adherence (Baum et al., 2009; French et al., 2009; Kipp, Desruisseau, & Qian, 2011; Moore et al., 2012; Van & Koblin, 2009; Wynn, Cozza, Zapor, Wortmann, & Armstrong, 2005) and sexual transmission of HIV (Khan et al., 2013; Strathdee & Sherman, 2003).

Among HIV-infected individuals in primary medical care, 20–40% use drugs (Durvasula & Miller, 2014), often non-injected cocaine or crack (Pence, Miller, Whetten, Eron, & Gaynes, 2006; Pisu et al., 2010; Shacham, Onen, Donovan, Rosenburg, & Overton, 2014; Skalski, Sikkema, Heckman, & Meade, 2013). While HIV primary care has long been recommended as an entry point for addressing drug use in HIV-infected individuals (Aberg et al., 2004; Centers for Disease Control and Prevention, 2004; Del Rio, 2003; Wilson et al., 2006), barriers in primary care settings include lack of in-clinic resources offering extended

substance abuse interventions, and lack of patient interest in such interventions when they are available.

Given these concerns, brief evidence-based interventions such as Motivational Interviewing (MI) would seem to offer advantages over more complex and lengthy interventions (Martins & McNeil, 2009; Miller & Rollnick, 2002; Miller et al., 2006; Neushotz & Fitzpatrick, 2008). However, in patients with complex problems, including HIV, brief MI almost certainly needs enhancement by some form of ongoing intervention or repeated contact to be effective (Emmons & Rollnick, 2001). Although brief interventions to reduce drug use among patients in primary care are currently being rolled out across the United States (Substance Abuse and Mental Health Services Administration (SAMHSA), 2016), recent findings of limited efficacy for such interventions (Roy-Byrne et al., 2014; Saitz, 2014; Saitz et al., 2014) have led to calls to rethink delivery of brief interventions for drug abuse in primary care (Hingson & Compton, 2014) and to find more effective methods of addressing drug abuse in such patients.

Technology offers innovative ways to extend health interventions (Kempf, Huang, Savage, & Safren, 2015; Lester et al., 2010; Marsch, Carroll, & Kiluk, 2014). Automated telephone interactive voice response (IVR) systems can be designed to provide daily questions for self-monitoring, with patients' answers stored in a database. When combined with another intervention, self-monitoring techniques reduce addictive behaviors (Moore et al., 2013; Mullen et al., 1997; Rose, Skelly, Badger, Naylor, & Helzer, 2012). In recent years, IVR has been used to improve the medical management of various health-related behaviors (David et al., 2012; Naylor, Naud, Keefe, & Helzer, 2010; Oake, Jennings, van Walraven, & Forster, 2009; Swendeman et al., 2015; Wolin et al., 2015). IVR does not require literacy, technical knowledge or special equipment, suggesting that it could be useful in low-income, low-literacy populations (Schroder, Johnson, & Wiebe, 2007). Therefore, we designed 'HealthCall' to incorporate IVR in enhancing brief intervention. HealthCall combines two main process elements: (1) daily calls to an interactive voice response (IVR) system for daily self-monitoring of the behavior targeted for change; and (2) personalized feedback (Emmons & Rollnick, 2001; Miller & Rollnick, 1991) based on the daily call data, presented to the patient and discussed briefly at two 30-day intervals. HealthCall, delivered over 60 days, includes the following steps: (1) after an initial brief MI session, the participant is instructed in how to make a daily call of ~2.5 min to self-monitor the targeted behavior and is advised to make the calls as an aid to decreasing the behavior; (2) individual personalized feedback graphs reflecting participants' HealthCall-reported target behavior are presented to patients by their MI counselors at 30-day intervals to facilitate brief (~10 min) discussions of patients' reductions of targeted behaviors.

Previously, we conducted a trial showing that MI + HealthCall achieved significantly greater drinking reduction than MI-only or educational control in HIV primary care alcohol-dependent patients (Hasin et al., 2013). We adapted HealthCall for non-injection drug users, and then conducted a randomized pilot study (N = 40) that (a) suggested better results with MI + HealthCall than with MI-only, and (b) indicated that HealthCall was acceptable to non-injection drug users in HIV primary care (Aharonovich et al., 2012). We subsequently investigated the efficacy of HealthCall to reduce non-injection drug use (NIDU) in HIV primary care patients. We now report the results of a large randomized trial comparing MI + HealthCall to MI-only and to an education control condition among largely minority, low SES non-injection drug users participating in HIV primary care clinics.

2. Method

2.1. Setting and participants

The study was conducted at three large urban HIV primary care clinics. Inclusion criteria included being age ≥18 years, enrollment in one of two New York City hospital-affiliated clinics, NIDU on ≥4 days

during the prior 30 days, and English- or Spanish-speaking. Exclusion criteria included active psychosis, suicidality, gross cognitive impairment, injection drug use during the prior 30 days, and alcohol or marijuana as the patient's primary substance. Participants provided written informed consent. Institutional review boards at the New York State Psychiatric Institute, St Luke's-Roosevelt Hospital and Mt. Sinai Medical Center in New York City approved all procedures.

2.2. Procedures

Substance-using patients attending a primary HIV clinic visit were informed about the study by their providers, who referred them, if interested, to meet with a study coordinator for written informed consent and assessment of eligibility. Potential participants were told that the purpose of the study was to investigate whether a brief meeting with a trained health care worker that was followed or not followed by brief daily phone calls about drug use would help patients reduce their drug use. Of 533 individuals assessed, 240 met eligibility, completed baseline assessments, and were randomized (see Study CONSORT Fig. 1). In a parallel three-arm randomized design (1:1:1 allocation ratio), participants were assigned to one of three conditions: MI + HealthCall; MI-only, or educational control (viewing a DVD on HIV self-care) that did not include drug use content. Randomization was stratified on drug use severity, depression and unstable housing using urn randomization (Zhao, Weng, Wu, & Palesch, 2012). All baseline assessments were completed prior to random assignment to treatment condition. Counselors administering MI-only or MI + HealthCall were blind to participants' assignment to these two treatment conditions until after the MI was administered, when they received the assignment via text message. Counselors and participants were not blinded to treatment condition after assignment. Study procedures were conducted in English or Spanish (participants' preference). Participants were compensated with gift cards for their assessments at each study visit.

2.3. Interventions

Bi-lingual study counselors (BA and MA levels) delivered the interventions. Visit time required for the baseline intervention (30 min) was equally balanced across the three conditions. The total length of the treatment period was 60 days for all three conditions. Counselors were trained and certified in MI and attended weekly supervision meetings. MI sessions were audiotaped and reviewed for quality assurance and to prevent counselor drift. Participants returned at two 30-day intervals after the baseline intervention session (30-day and 60-day) for assessments and a brief booster session (10–15 min) with the study counselor. Follow-up assessment visits occurred at 3, 6 and 12 months after baseline.

2.4. Education arm (control)

Study counselors informed participants that their use of non-injection drugs was at levels potentially harmful to their health, and showed participants a 30-min educational HIV self-care DVD (English or Spanish versions) that did not include specific content about substance use. Counselors then provided a digital alarm wrist watch to patients, and suggested that they use it as a medication reminder. (This was given to be parallel with the other two arms.) At 30 and 60 days, participants returned for assessment and brief booster advice sessions, where substance use reduction was encouraged.

2.5. MI-only arm

The study counselor administered a 25–30 min individual MI session using standard MI techniques. These techniques included a dialogue with the patient about health consequences of drug use, exploring ambivalence, pros and cons of use, patient's readiness to change, and