Original Clinical Report

Pilot Randomized Trial of a Recovery Navigator Program for Survivors of Critical Illness With Problematic Alcohol Use

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Objective: Many survivors of critical illness have problematic alcohol use, associated with risk of death and hospital readmission. We tested the feasibility, acceptability, treatment fidelity, and potential efficacy of a customized alcohol intervention for patients in ICUs. The intervention was delivered by a Recovery Navigator using principles of motivational interviewing and shared decision-making.

Design: Pilot randomized trial.

Setting: Two urban ICUs in Denver, CO.

Patients: Patients with problematic alcohol use were enrolled prior to hospital discharge.

Interventions: Patients were randomly assigned to usual care, single-session motivational interviewing and shared decision-making, or multisession motivational interviewing and shared decision-making.

Measurements and Main Results: We assessed feasibility via enrollment and attrition, acceptability via patient satisfaction (Client Satisfaction Questionnaire-8), fidelity via observation and questionnaires, and potential efficacy via group means and CIs on measures of alcohol use, psychiatric symptoms, cognition, and other alcohol-related problems. Over 18 months, we offered the study to 111 patients, enrolled 47, and randomized 36; refusals were mainly due to stigma or patients' desire to handle problems on their own. Groups were similar at baseline, and 67% of patients met criteria for alcohol use disorder. Average patient satisfaction was high (mean = 28/32) regardless of group assignment. Sessions were delivered with 98% adherence to motivational interviewing principles and excellent motivational interviewing spirit; patients perceived the intervention to be more autonomy supportive than usual care. Group means after 6 months suggested that patients receiving the intervention might improve on measures such as alcohol use, psychiatric symptoms, legal problems, and days of paid work; however, they did not receive more substance use treatment. All results were nonsignificant due to small sample size.

Conclusions: A Recovery Navigator intervention was feasible and acceptable for delivering high-fidelity brief interventions to ICU patients. Changes in alcohol-related problems with motivational interviewing and shared decision-making were nonsignificant but clinically meaningful in size. A full-scale randomized trial of motivational interviewing and shared decision-making is warranted.

Key Words: alcohol; critical illness; decision-making; intensive care unit; motivational interviewing; navigation

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Problematic alcohol use is a spectrum ranging from excessive consumption without consequences to alcohol use disorder (AUD) (1) The United States spends $26 billion annually to treat alcohol use and its consequences (2). Although two third of patients with problematic alcohol use see a healthcare provider annually, only 24% have their drinking assessed (3). Prevalence estimates for problematic alcohol use in critically ill patients vary from 19% to 40% (4, 5), and of ICU patients who are regular drinkers up to 65% meet criteria for AUD (6). In total, around 1.4 million patients with problematic alcohol use are discharged from

U.S. ICUs annually (7), and 40–56% of these patients will return to the hospital within 1 year (8, 9).

Screening, Brief Intervention, and Referral to Treatment (SBIRT) (10) is a paradigm to assess and address problematic drinking. SBIRT has been extensively studied in healthcare settings (10–13). SBIRT involves using a validated questionnaire to screen all patients for alcohol use. When problematic use is identified, whether or not it rises to the level of AUD, a brief intervention is used to motivate change. Motivational interviewing (MI) is a common brief intervention used in SBIRT (12, 14). In a typical MI conversation, a provider and patient spend 15–30 minutes weighing the pros and cons of drinking, developing a goal, and formulating a plan. Ideally, the patient will choose to reduce alcohol consumption or achieve abstinence. Although SBIRT produces modest reductions in alcohol consumption and consequences, there is significant controversy regarding its efficacy in inpatient settings (15, 16).

SBIRT has been studied in primary care, trauma, and emergency departments (16, 17), but not in ICU survivors. Several characteristics of this population make it difficult to extrapolate findings from other settings (18). First, providers may not offer SBIRT because substance use is perceived to be less important than patients' other medical conditions (13), although in fact severity of illness is the best predictor of ICU survivors' readiness to change (6). Second, SBIRT implementation is inconsistent: in a study at three hospitals using SBIRT, only 72% of patients with problematic alcohol use were successfully identified, only 50% received an intervention, and just 34% had any follow-up (6). Finally, semistructured interviews with ICU patients and families suggest barriers due to mental health or cognitive concerns, including temporary delirium while hospitalized. Patients reported that caring providers and family members' opposition to drinking were key facilitators of change. Additionally, patients said their willingness to stop drinking was increased based on religious faith, events related to hospitalization, and accumulating health problems (18). As a whole, these findings suggest missed opportunities for SBIRT with critically ill patients and suggest that an alternative approach is needed.

RECOVERY NAVIGATOR: A NOVEL SBIRT INTERVENTION FOR CRITICALLY ILL PATIENTS

Based on these findings, we created a Recovery Navigator role to deliver SBIRT in the ICU. The navigator was a paraprofessional trained in MI, who assessed barriers and facilitators and provided a tailored intervention to ICU patients. A specially trained Recovery Navigator helped to ensure systematic SBIRT delivery despite the barriers reported by ICU clinicians.

This intervention combined several theoretically pertinent components (**Fig. 1**): first, the Recovery Navigator was trained on MI (19) using a well-established learning approach (20). Second, the navigator employed principles from self-determination theory, which integrates well with MI (21) and suggests the importance of patient-provider relatedness, patient autonomy, and perceived competence. Third, to enhance autonomy and competence, the navigator used decision support tools including a written summary of the conversation. Fourth, to facilitate referrals, the navigator built relationships with community organizations

that treat AUD. Finally, the navigator was trained to capitalize on factors that make critical illness a "teachable moment" for patients with problematic alcohol use, such as patients' recognition of the seriousness of their medical condition, family support networks mobilized in response to a health crisis, or religious support. Based on these components, the Recovery Navigator intervention is best described as a MI and shared decision-making (MI-SDM) model of care.

The Recovery Navigator was hospital based, which facilitated initial contact in the ICU. Because some patients had delirium, we hypothesized that longitudinal contact after hospital discharge might be beneficial. Repeated contact would permit time for patients' cognition to improve, allow patients to weigh the pros and cons of alcohol use, and let patients consider treatment. Conversely, ICU patients might be motivated enough for a single session to help due to factors like medical severity and mobilized social support. Because the need for follow-up contact was unclear, we designed a pilot trial of both single-session and multisession MI-SDM.

STUDY PURPOSE

The goal of this study was to engage critically ill patients with problematic alcohol use in treatment. A three-arm pilot randomized trial was designed to test the Recovery Navigator strategy: usual care, a single MI-SDM session, or repeated MI-SDM sessions. This preliminary study was intended to determine the feasibility and acceptability of MI-SDM and to suggest whether a future full-scale efficacy study is warranted. We considered patient recruitment, demographics, randomization, attrition, treatment fidelity, and descriptive results on potential outcomes.

MATERIALS AND METHODS

Setting and Participants

This Institutional Review Board–approved study was conducted in two urban medical ICUs. Patients were screened with the Alcohol Use Disorders Identification Test (AUDIT)-Concise (22). Adult men (≥ 18 yr) with a score greater than or equal to 4 or women with a score greater than or equal to 3 were enrolled. Patients were eligible only after their critical illness and any delirium were resolved. Patients were excluded if pregnant, unable to speak and read English, unable to provide consent, or expected to survive less than 6 months.

Procedure

Screening and Enrollment. Medical ICU patients were screened for eligibility daily by a research coordinator, who administered the AUDIT-C and obtained informed consent.

Randomization. Patients were randomized in blocks of six for equal groups, stratified by hospital. The coordinator randomized patients using a computer-generated algorithm.

Blinding. It was impossible to blind patients or the navigator, but the research assistant who collected outcome data was blinded to treatment allocation, and a different person randomized patients. Patients were instructed not to tell the research assistant which treatment they received, and there was no evidence that the blind was broken.
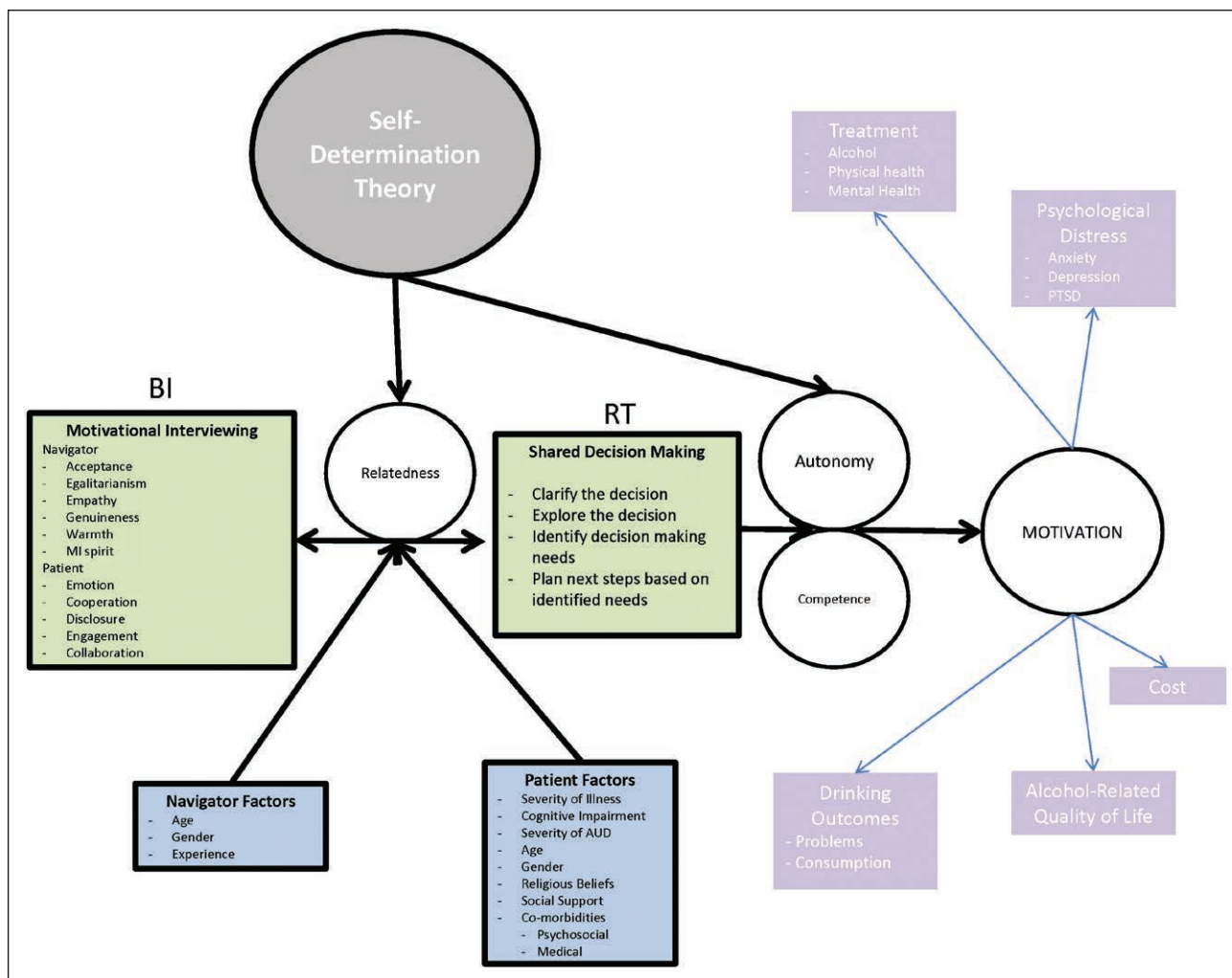
Figure 1. Theoretical model guiding the intervention, showing adaptations specific to the context of critically ill patients in the ICU. Standard substance use treatment approaches include screening, brief intervention (BI), and referral to treatment (RT). Motivational interviewing principles were used for BI, and shared decision-making principles were used for RT. Self-determination theory suggests an overall focus on patient-provider relatedness, patient autonomy and competence, and motivation for treatment. Specific adaptations made based on pilot work with a critically ill population included attention to patients' severity of illness, possible delirium, severity of alcohol use, religiosity, and available social support. AUD = alcohol use disorder, PTSD = posttraumatic stress disorder.

Initial Patient Contact. The study coordinator who enrolled patients collected baseline data and provided a $20 gift card. Patients randomized to either intervention group then completed their first session with the navigator. In single-session MI-SDM, patients worked with the navigator to develop a recovery plan including referral to treatment if appropriate; there was no additional contact with the navigator. In multisession MI-SDM, patients developed plans that also included one or more follow-up navigator sessions.

Follow-Up Contacts. At enrollment, the coordinator collected contact information and scheduled follow-up visits. Reminders were sent before 3- and 6-month follow-ups, with cab vouchers or bus tokens if needed. The 6-month follow-up could also be completed by phone.

Intervention and Comparison Groups

Usual Care. About half of patients received SBIRT, usually including a short discussion about alcohol use (not with the Recovery Navigator) and a list of treatment resources. Usual care could

include a range of strategies from brief advice to MI, but was not standardized. The study team had no contact with patients beyond collecting data.

Single-Session MI-SDM. One hospital-based MI-SDM session was delivered by the Recovery Navigator, a White woman with a master's degree in social work and prior experience treating alcohol use and using MI. The navigator asked permission to discuss alcohol use, then reviewed AUDIT results and AUD symptoms. She used MI to help patients weigh pros and cons of drinking and offered feedback about connections between the patient's alcohol use and current illness. Finally, she asked patients to verbalize a plan. If this included a desire for treatment, she helped patients compare options including self-change and facilitated referrals.

Multisession MI-SDM. Patients completed a similar first session with the same Recovery Navigator. Then the navigator 1) followed up with patients after discharge; 2) provided several MI-SDM sessions on a schedule tailored to patient preferences; and 3) offered instrumental support (e.g., transportation vouchers) to help patients execute their plans. Sessions were suggested

weekly in the first month, then monthly, for at least six visits over 3 months. Follow-up sessions were similar to the first, using MI if patients continued to drink and facilitating treatment decision-making if not. The navigator provided referrals from Substance Abuse and Mental Health Services Administration's treatment locator (https://findtreatment.samhsa.gov/) and contacted resources for warm handoffs.

Measures

Feasibility. Feasibility indicators included: 1) recruitment, defined as the number of patients enrolled per month; 2) patients' willingness to be randomized; 3) baseline equivalence of groups; 4) attrition within each group; and 5) number and length of MI-SDM visits.

Acceptability. The Client Satisfaction Questionnaire (CSQ)-8 was used to assess acceptability. This scale's eight items are rated on a four-point Likert-type scale and load on a single dimension. The instrument has excellent internal consistency ($\alpha = 0.83$–0.93) (23).

Treatment Fidelity. Fidelity was enhanced via MI training, plus interactions with 11 trial patients that were rated by expert MI coders. Feedback was shared with the navigator. After randomization began, 50% of sessions were recorded and reviewed using the MI skills code (MISC) (24). Patients also completed four theory-related scales: 1) the 10-item Scale To Assess the therapeutic Relationship (STAR) alliance measure (25); 2) the Autonomy-Healthcare Climate scale (26); 3) the Perceived Competence Scale (27); and 4) a Treatment Motivation Scale.

Efficacy. Potential outcomes for a larger-scale efficacy study were assessed to confirm the utility of measures and the potential of MI-SDM to generate change. The primary outcome was the 30-day Alcohol Timeline Follow-Back (28), which measures abstinence from alcohol, days abstinent, and heavy drinking days. Secondary outcomes were healthcare utilization (inpatient readmission, outpatient visits); alcohol treatment; and psychiatric treatment, all based on the Treatment Services Review tool (16). Alcohol-related problems were assessed via the Short Inventory of Problems-2, revised (SIP-2R) (29), Hospital Anxiety and Depression Scale (30), Patient-Reported Outcomes Measurement Information System Applied Cognition scale (31), and Impact of Events Scale (32) for trauma. Patients' self-reported legal problems and employment were also assessed. Finally, social support was measured with the important people interview (33).

Data Analysis

We examined descriptive data including group-level means or proportions and CIs. We considered between-group differences in outcomes based on a completers analysis rather than intent-to-treat (ITT), both because attrition was considered separately and because usual care had the most attrition and was artificially disadvantaged using ITT. However, we did reanalyze results using ITT in a sensitivity analysis, and conclusions were unchanged. Consistent with the approach to pilot studies proposed by Leon et al (34), we did not calculate a priori power or use inferential tests. Instead, we examined the magnitude and direction of any between-group differences to draw conclusions about the usefulness of measures and the desirability of future studies on MI-SDM.

RESULTS

Feasibility

From January 2017 to June 2018, we screened 111 patients and enrolled 47. Of 64 who refused randomization, major reasons were stigma (e.g., worried about family reactions), being too busy, or wanting to solve problems independently. The first 11 patients were used to refine MI-SDM and are not presented; the remaining 36 were randomized and included in all analyses.

Table 1 shows demographics by group. Participants' median age was 44 (range, 28–74), 60% were male, and 50% were White non-Hispanic. Their median AUDIT-C score was 10 (range, 3–12), and 24/36 had scores suggesting AUD. There were no pretreatment differences ($ps > 0.12$), except for higher frequency of chronic obstructive pulmonary disorder or pneumonia ($x^2 = 6.55$; $p = 0.04$) and more comorbidities ($M = 2.67$) in single-session MI-SDM than in the other two groups ($M = 1.42$–1.91; $F(2, 32) = 3.42$; $p = 0.45$). However, Acute Physiology and Chronic Health Evaluation severity scores did not differ between groups, nor did baseline alcohol use ($ps > 0.48$). Overall, randomization produced roughly equivalent groups although single-session MI-SDM recipients were slightly more medically ill.

Patient flow is shown in **Figure 2**: 42% of patients accepted help, which is notable among patients not seeking alcohol treatment. There was 31% attrition by 6 months, distributed evenly across groups ($x^2 = 2.25$; $p = 0.32$). Completers were equivalent to dropouts on most demographics ($ps > 0.09$), although women were more likely to remain in the study ($x^2 = 9.97$; $p = 0.002$). Despite attrition, all single-session MI-SDM patients received one session, and multisession MI-SDM participants completed an average of 4.92/6 sessions (sd = 5.98). Session length was similar for single-session ($M = 40.8$ min) and multisession MI-SDM ($M = 42.2$ min).

Acceptability

The mean CSQ-8 score was high ($M = 27.8/32$; range, 2–32), with no differences across groups. CSQ-8 scores were not strongly correlated with age, gender, race, housing, income, education, employment, or comorbidities ($rs < 0.29$). Satisfaction was lower for Latino/Latina patients ($r = -0.32$) and higher for patients with AUD ($r = 0.21$). No adverse events were reported in any group.

Treatment Fidelity

After the training phase, 98% of navigator utterances were MI consistent. Median MISC global ratings on a 1–7 scale were as follows: seven for acceptance (range, 5–7), six for empathy (range, 4–7), five for MI spirit (range, 4–6), and six for client self-exploration (range, 4–7). These results suggest high fidelity to both the techniques and the spirit of MI.

Patients rated both MI-SDM groups more autonomy supportive than usual care (**Table 2**), with slightly higher scores for multisession than single-session MI-SDM. There was a small difference on the Perceived Competence Scale, favoring the two MI-SDM conditions. Patient-provider relatedness and readiness for treatment were similar across groups. The group differences on autonomy and competence support are consistent with self-determination theory.

TABLE 1. Participant Demographics by Experimental Group

Characteristic	n (%), by Experimental Group		
	Standard Care (n = 12)	Single-Session MI-SDM (n = 12)	Multisession MI-SDM (n = 12)
Men	7 (58)	5 (42)	7 (58)
Women	5 (42)	7 (58)	5 (42)
White non-Hispanic	6 (50)	4 (33)	8 (67)
Hispanic (any race)	3 (25)	5 (50)	2 (17)
African-American	0 (0)	2 (17)	1 (8)
Native American	1 (8)	0 (0)	0 (0)
Other race or ethnicity	2 (17)	1 (8)	1 (8)
Age, yr			
25–34	2 (17)	1 (8)	2 (17)
35–54	7 (58)	10 (83)	9 (75)
55–74	3 (25)	1 (8)	1 (8)
Homeless (last 3 mo)	3 (25)	5 (42)	2 (17)
Unemployed (last 3 mo)	8 (67)	8 (67)	6 (50)
College degree or higher	5 (42)	3 (25)	3 (25)
Income ≤ $40,000	11 (92)	7 (58)	8 (67)
Pneumonia or chronic obstructive pulmonary disorder	1 (8)	3 (25)	0 (0)
Gastrointestinal bleed	2 (17)	5 (42)	1 (8)
Sepsis	0 (0)	2 (17)	1 (8)
Alcohol withdrawal	9 (75)	8 (67)	9 (75)
Heart disease	2 (17)	4 (33)	2 (17)
Diabetes	2 (17)	3 (25)	1 (8)
Cirrhosis	4 (33)	4 (33)	1 (8)
HIV	1 (8)	0 (0)	0 (0)
Alcohol Use Disorders Identification Test-Concise score ≥ 8	8 (67)	9 (75)	7 (58)

MI-SDM = motivational interviewing and shared decision-making.
Diagnosis codes were not mutually exclusive, so totals add to > 100%.

Patient Outcomes

Group means and CIs for each outcome are shown in Table 2. All differences were in the expected direction. Based on descriptive statistics, patients had more days abstinent, less heavy drinking, fewer alcohol problems, lower depression, anxiety, and posttraumatic stress disorder symptoms, fewer cognitive problems, more days worked, fewer legal problems, and less healthcare utilization in the MI-SDM groups than with usual care. CIs were large and overlapped because of the small sample, so these preliminary results cannot be used to draw conclusions about MI-SDM's efficacy. Even though the effects were clinically meaningful in magnitude (e.g., 5–9 fewer heavy drinking days per month), we cannot be certain whether they are replicable because of this study's small sample size. Interestingly, there was no evidence that more patients received substance use treatment after MI-SDM, and no difference in rehospitalization.

Any benefits, therefore, may be due to MI-SDM itself rather than the navigator's facilitation of substance use treatment.

DISCUSSION

Results suggest that MI-SDM delivered by a Recovery Navigator is feasible and acceptable for brief substance use intervention in intensive care. Diverse urban hospital ICU patients with problematic alcohol use were willing to receive MI-SDM. About two thirds had AUD, and all had significant illness. Although attrition was 31%, patients received interventions as intended, on average one contact lasting 40 minutes in single-session MI-SDM, or five sessions lasting 42 minutes in multisession MI-SDM. Thus, the intervention was feasible even though some patients did not provide follow-up data. Patients lost to follow-up and completers
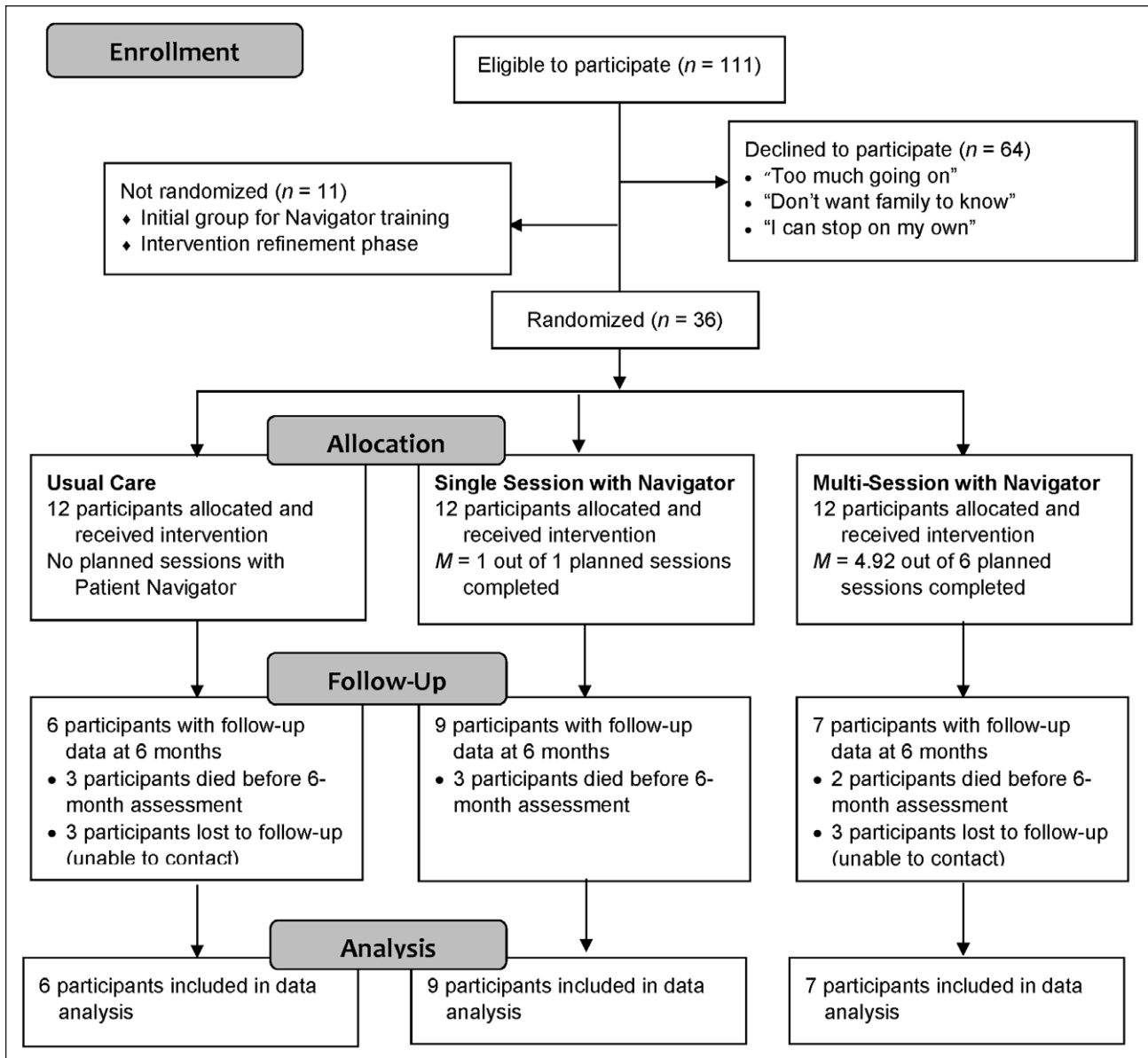
Figure 2. Consolidated Standards of Reporting Trials diagram showing the flow of participants through the study.

were similar on all variables including alcohol use severity, which reduces concern about bias due to attrition. Patients were equally satisfied with both MI-SDM conditions and with usual care.

The intervention was delivered with high fidelity to MI principles based on observational data and patient ratings. Preliminary data suggested that autonomy and competence are particularly important to ICU patients with problematic alcohol use, and group means confirmed that MI-SDM was different from usual care on these variables. The two MI-SDM groups were also associated with higher patient ratings of support from significant others 6 months after enrollment. These findings support the theoretical basis for MI-SDM. Contrary to expectations, the groups did not differ on relatedness or readiness for treatment.

Patients receiving MI-SDM had more abstinence from alcohol, fewer heavy drinking days, and fewer alcohol-related difficulties than usual care patients based on descriptive statistics. None of

these findings were statistically significant due to small sample size, and the efficacy of MI-SDM is therefore still unknown, but differences between means were in the expected direction and clinically meaningful in magnitude. A full-scale randomized trial is needed to determine whether these promising initial results of MI-SDM are replicable. Both single-session and multisession MI-SDM are potentially viable for future studies.

This was a pilot study with a small sample. Between-group differences did not meet conventional criteria for significance but were large enough in magnitude to be clinically meaningful. The current evidence is thus suggestive but not conclusive, and the primary finding of this study is that MI-SDM is viable for further testing. To detect differences on the days abstinent measure with α of 0.05, the same three groups, and similar intervention effect sizes, we would have needed 46 participants per group to achieve 80% power. Achieving 80% power to detect effects on other outcomes would

TABLE 2. Treatment Outcomes at 6-Month Follow-Up

	Mean (95% CI), by Experimental Group		
Treatment Fidelity Variables	**Standard Care** **(n = 6)**	**Single-Session MI-SDR** **(n = 9)**	**Multisession MI-SDR** **(n = 7)**
Client Satisfaction Questionnaire-8 Satisfaction Scale	26.5 (23.1–29.9)	27.1 (24.9–29.3)	28.8 (27.3–30.2)
Autonomy-Healthcare Climate Scale	56.2 (26.2–86.0)	79.0 (56.0–102.0)	89.2 (72.8–105.6)
Scale To Assess the therapeutic Relationship Therapeutic Alliance Scale	35.6 (30.0–41.3)	35.0 (27.6–42.4)	31.8 (21.5–42.2)
Perceived Competence Scale	19.7 (10.2–29.1)	24.3 (20.6–28.0)	27.0 (25.4–28.6)
Alcohol Treatment Readiness Scale	79.0 (68.6–89.4)	73.7 (62.4–85.0)	71.4 (53.5–89.3)
Outcome Variables	**Mean (95% CI), by Experimental Group**		
Days abstinent (of last 30 d)	17.4 (4.5–30.0)	23.7 (14.8–30.0)	21.9 (9.2–30.0)
Heavy drinking days (of last 30 d)	12.7 (0.0–25.6)	2.6 (0.0–7.9)	8.0 (0–20.7)
Alcohol problems (Short Inventory of Problems-2, revised)	21.2 (1.1–41.3)	11.4 (0.3–22.4)	5.85 (−5.7 to 17.4)
HADS Depression Score	10.3 (5.8–14.9)	5.1 (1.4–8.8)	4.4 (0.0–9.5)
HADS Anxiety Score	13.2 (7.8–18.5)	8.6 (4.3–12.8)	5.1 (0.4–9.9)
IES Intrusion Score (PTSD) IES Avoidance Score (PTSD)	5.8 (−0.2 to 11.9) 5.7 (−0.5 to 11.8)	3.4 (−2.7 to 9.6) 6.2 (−0.3 to 12.8)	4.9 (−2.0 to 11.8) 4.9 (−0.5 to 10.2)
IES Hyperarousal Score (PTSD)	5.5 (−4.1 to 15.1)	3.2 (−2.6 to 9.1)	0.8 (−0.3 to 2.0)
Patient-Reported Outcomes Measurement Information System Cognition Score	19.7 (5.0–34.4)	33.6 (24.1–43.0)	37.9 (28.8–46.9)
Days worked (last 3 mo)	19.7 (0.0–45.2)	25.8 (3.9–47.7)	26.6 (0.0–59.7)
Number of physician visits (last 3 mo)	6.5 (0.0–15.4)	1.1 (0.2–2.1)	0.4 (0.0–1.2)
Important people inventory	77.8 (56.4–99.3)	86.9 (72.2–101.6)	96.7 (91.0–102.4)
	Percent (95% CI), by Experimental Group		
No alcohol in last 30 d	33 (0–71%)	33 (2–64%)	67 (32–100%)
Any substance use treatment	33 (0–87%)	22 (0–56%)	43 (0–92%)
Received detoxification	33 (0–88%)	0 (NA)	14 (0–49%)
Received psychiatric medication	50 (0–100%)	11 (0–37%)	0 (NA)
Rehospitalized (last 3 mo)	33 (0–88%)	22 (0–56%)	43 (0–92%)
Any legal problems (last 3 mo)	33 (0–88%)	0 (NA)	0 (NA)

HADS = Hospital Anxiety and Depression Scale, IES = Impact of Events Scale, MI-SDM = motivational interviewing and shared decision-making, NA = not applicable, PTSD = posttraumatic stress disorder.
CIs could not be computed when the cell total was zero cases.

have required similar sample sizes: 41 participants per group for heavy drinking days, 30 for abstinence, and 28 for the SIP-2R measure of alcohol-related problems, These sample sizes should be readily achievable in a single-site randomized controlled trial. Attrition was a partial limitation as described above. We used a completers analysis rather than ITT, but a sensitivity analysis using ITT only exaggerated MI-SDM's effects. The fact that patients who dropped out were similar to those who remained is reassuring, but differences related to attrition might have emerged in a larger sample. Similarly, even though randomization produced equivalent groups at baseline, a larger sample might have revealed failures of randomization. These limitations can be addressed in a full-scale trial.

Although 47 of the 111 patients approached for this study agreed to participate, 64 refused, with major reasons being stigma or desire to handle the problem themselves. Additionally, we identified screening for substance use as a gap in regular ICU care even at hospitals that have policies to promote it. Both of these findings suggest a need to improve recruitment in future studies or routine clinical interventions to address substance use among critically ill patients. More automated screening procedures such as automatic flags for alcohol problems in electronic health records and prompts or queries to identify patients with problematic alcohol use could facilitate future recruitment. Future trials also might randomize at the unit level to capitalize on clinician enthusiasm for addressing

substance use in units where it exists. It might also be possible to train ICU clinicians on basic MI strategies for use in linking patients to studies or interventions that address substance use.

Finally, groups differed on only three of five hypothesized mechanisms of action for MI-SDM. MI-SDM supported patients' autonomy and perceived competence, as well as family engagement. However, relatedness and treatment readiness were similar across groups, and MI-SDM patients were no more likely to receive alcohol treatment. In fact, the navigator reported that many patients declined referrals precisely because they valued autonomy and wanted to change on their own. Alternately, patients might have seen MI-SDM itself as a form of treatment. The balance between autonomy support and treatment facilitation is an important issue for future research.

CONCLUSIONS

ICUs serve many patients with problematic alcohol use, but providers do not adequately address alcohol use. A Recovery Navigator was a feasible and acceptable way to offer SBIRT in the ICU setting. About 40% of patients offered the intervention accepted it, which is a positive result among patients who may not recognize they have a problem. Once patients enrolled, they were highly satisfied with the support they received. MI-SDM promoted patients' autonomy and competence and patients in MI-SDM reported less alcohol use and improvement on symptoms and role-functioning metrics, although between-group comparisons were nonsignificant due to small sample size. MI-SDM did not increase referral to treatment. MI-SDM should be tested in a full-scale clinical trial to address alcohol-related health risks in a vulnerable ICU population.

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