

## Partnerships and pathways of dissemination: The National Institute on Drug Abuse—Substance Abuse and Mental Health Services Administration Blending Initiative in the Clinical Trials Network

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### Abstract

Since 2001, the National Drug Abuse Treatment Clinical Trials Network (CTN) has worked to put the results of its trials into the hands of community treatment programs, in large part through its participation in the National Institute on Drug Abuse—Substance Abuse and Mental Health Services Administration Blending Initiative and its close involvement with the Center for Substance Abuse Treatment's Addiction Technology Transfer Centers. This article describes (a) the CTN's integral role in the Blending Initiative, (b) key partnerships and dissemination pathways through which the results of CTN trials are developed into blending products and then transferred to community treatment programs, and (c) three blending initiatives involving buprenorphine, motivational incentives, and motivational interviewing. The Blending Initiative has resulted in high utilization of its products, preparation of more than 200 regional trainers, widespread training of service providers in most U.S. States, Puerto Rico, and the U.S. Virgin Islands and movement toward the development of Web-based implementation supports and technical assistance. Implications for future directions of the Blending Initiative and opportunities for research are discussed. © 2010 Elsevier Inc. All rights reserved.

**Keywords:** Dissemination; Technology transfer; Treatment adoption; Treatment implementation; Buprenorphine; Motivational incentives; Motivational interviewing; Evidence-based treatment; Substance abuse

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## 1. Introduction

The National Institute on Drug Abuse (NIDA) established the National Drug Abuse Treatment Clinical Trials Network (CTN) in 1999 with two major aims: (a) to conduct pharmacological and behavioral treatment trials to determine the effectiveness of drug abuse interventions within diverse community treatment programs and patient populations and (b) to transfer research results from its trials to community program providers and their patients. This article describes how the CTN has approached this second aim over the past decade through its contribution to the NIDA—Substance Abuse and Mental Health Services Administration (SAMHSA) Blending Initiative and its partnerships with researchers, community treatment program providers, and the SAMHSA Center for Substance Abuse Treatment's (CSAT) Addiction Technology Transfer Centers (ATTCs). The article also details the pathways by which the results of CTN trials are developed into dissemination products and then transferred to community programs and providers. Finally, the article describes three blending initiatives that promote the adoption and implementation of buprenorphine, motivational incentives, and motivational interviewing in the United States as illustrations of how the CTN has helped the NIDA-SAMHSA Blending Initiative progress.

The CTN and its contribution to the NIDA-SAMHSA Blending Initiative fits into a broader context of federal efforts to transfer research findings and evidence-based addiction treatments to community programs. These efforts have included major print-based initiatives (e.g., NIDA treatment manuals and CSAT Treatment Improvement Protocols), SAMHSA's National Registry of Evidence-based Programs and Practices ([www.nrepp.samhsa.gov/](http://www.nrepp.samhsa.gov/)), and use of interpersonal strategies (e.g., national conferences, technology transfer programs) that bring together researcher, service provider, and policy maker communities (see Brown & Flynn, 2002, for detailed discussion). The CTN fits into this latter category in that it has relied upon bidirectional collaborations between community-based researchers and service providers in the development and conduct of trials, the use of local expert trainers to prepare agencies for implementation and to provide programs with ongoing consultative support, and the development of program-based supervisors to provide performance feedback to frontline clinicians and coach them in implementing treatments with fidelity (Guydish, Tajima, Manser, & Jessup, 2007; Hanson, Leshner, & Tai, 2002). These components have been highlighted as essential elements of program-based technology transfer efforts (Fixsen, Naoom, Blasé, Friedman, & Wallace, 2005).

Simpson (2002) and Simpson and Flynn (2007) have categorized program-based technology transfer into four stages. First, programs expose their staff to a treatment using content-focused education and training (Training). After programs and their staff become familiar with the treatment, they make a commitment to adopt it within their practice

settings (Adoption). Subsequently, a trial period of treatment implementation occurs (Implementation) in which the value of the treatment (client acceptability, feasibility, effectiveness, costs) to providers and patients is demonstrated. If proven valuable, programs then put the treatment to routine use in a manner appropriate to their settings (e.g., targeted patient populations, treatment formats, and levels of care) without compromising the fundamental tenets of the treatment (Practice Improvement). The staff members' experience using the treatment, perception of the organizations' support of treatment implementation, and changes in staffing and setting characteristics continuously influence progression through these stages.

As CTN effectiveness trials have concluded, the CTN has been challenged to transfer the research findings to the 240 community treatment programs across the country that have participated in the network of 16 Regional Research and Training Centers. In meeting this challenge, the CTN has played an integral role in the NIDA-SAMHSA Blending Initiative that provides community programs with timely education, training, and implementation support for the adoption of treatments that have been proven effective in CTN trials.

## 2. Blending initiative

Developed in 2001 by NIDA and SAMHSA and directed by NIDA's Office of Science Policy and Communications, the Blending Initiative melds science and practice together to improve substance use disorder treatment (see Condon, Miner, Balmer, & Pintello, 2008, for a full description). Its primary goal is to accelerate the adoption and implementation of research findings from the CTN trials and other NIDA-funded treatment studies into community-based practice through the development of blending products and accompanying training programs. The Blending Initiative promotes its products and training programs through partnerships with key stakeholders involved in evidence-based treatment dissemination and via dissemination pathways created to formally facilitate community programs' adoption and implementation of these treatments.

Collaboration between the CTN and SAMHSA/CSAT ATTCs has been an essential feature of the Blending Initiative. The ATTC program is a nationwide network of 14 Regional Centers coordinated by a National Office that serves as a major vehicle through which SAMHSA disseminates scientific findings and evidence-based addiction treatments to community programs (Horvatic, 2006). Each regional ATTC provides education, training, and technical assistance to raise awareness of evidence-based treatments and to encourage their adoption and implementation within its geographical area. The ATTC National Office coordinates the Regional Centers and assists with marketing ATTC activities and products, including the blending products. Other key stakeholders involved in the

development and delivery of blending products and training programs for its initiatives include addiction researchers and community-based treatment program directors and counselors from the CTN trials, as well as state-level policy makers involved in dissemination efforts (Condon et al., 2008).

Building on these partnerships within the CTN and ATTC, the Blending Initiative actively transfers CTN research findings into community programs along several pathways (see Fig. 1). First, CTN trials must demonstrate that addiction treatments are effective when used in community programs. This approach follows the stage model of psychotherapy development in which innovative treatments (Stage I) that have been found to work under tightly controlled research conditions (Stage II) are tested in the “real world” (Stage III; Onken, Blaine, & Battjes, 1997; Rounsaville, Carroll, & Onken, 2001). In Stage III research, treatments typically are examined across several programs and implemented by program-based providers, a process consistent with the CTN’s first aim. Potential treatment implementation barriers are addressed in the design of CTN trials by having community providers collaborate with investigators to define pertinent research questions and to understand what providers need to properly implement new treatments, a process consistent with CTN’s second aim.

Second, blending teams form to develop dissemination products that support the adoption of specific treatments proven effective in CTN trials. The teams consist of CTN

researchers, program providers, and ATTC technology transfer experts. Team members determine what types of products are most likely to facilitate the successful transfer of research results to the community. Each team then develops the products and executes a strategic plan for distribution and training. The strategic plans usually include a train-the-trainer approach. In this approach, individuals from the CTN and ATTCs are prepared to train others in the different products. They review product content and training protocols and then practice instructional activities under the guidance of an expert blending product trainer. Subsequently, they return to their regions and then train community program staff. The teams continue to support the trainers’ adoption and implementation efforts by providing them with technical assistance and developing list serves and Web sites as resources for continued learning, working largely through the ATTCs. The CTN’s Research Utilization Committee (RUC), which functions as the formal locus for implementation activities throughout the CTN, is also involved in this process. The RUC forms workgroups that participate in the train-the-trainer process described above; conduct separate training for CTN-affiliated clinicians, supervisors, and program managers; track implementation activities across the CTN; and identify training needs of the CTN-affiliated treatment programs. For the remainder of this article, the terms *blending team* and *workgroup* are used interchangeably to refer to both the NIDA/SAMHSA blending teams

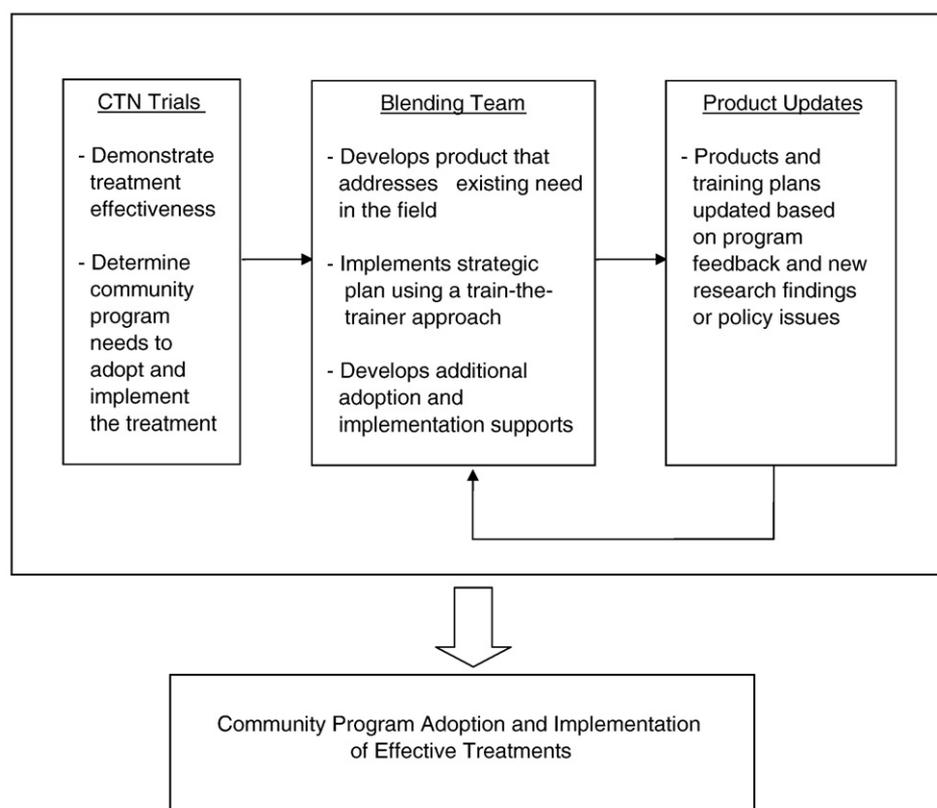


Fig. 1. Dissemination pathways of the NIDA-SAMHSA Blending Initiative within the CTN.

and the RUC workgroups, as there is considerable overlap in membership and function.

Third, as experience is gained with the products and users provide feedback, or as new related research findings or policy issues emerge, products are revised to accommodate this information. The ultimate aim of this process is to promote the timely adoption and implementation of the treatments such that they become part of routine community program practice.

### 3. Blending initiatives based on CTN trials

Three blending initiatives based on interventions tested in CTN trials have been initiated to date, promoting the adoption of three evidence-based treatments: buprenorphine, motivational incentives, and motivational interviewing (Condon et al., 2008). For each of these, we describe dissemination pathways for the CTN trial findings, blending team product development, training, additional adoption and implementation supports, and product updates. We also present data on training activity, product utilization and treatment adoption, and participant satisfaction. Training/Satisfaction data come from the CSAT Customer Satisfaction Tool collected from all participants at ATTC training events and 30-days postevent; these data are then uploaded into the CSAT Services Accountability Improvement System. The survey contains 5-point Likert scale items that evaluate overall satisfaction with training (1 = *very dissatisfied*, 5 = *very satisfied*) and also asks participants if they have applied what they had learned to their work (yes/no). The ATTC National Office tracks the blending product downloads (i.e., the opening/viewing of product components available online) as a measure of product utilization (from July 2008 when products were first posted through August 2009). Published accounts, augmented by blending team and RUC workgroup survey data, document program treatment adoption.

#### 3.1. Buprenorphine

Buprenorphine is a medication that acts as a partial agonist at the mu-receptor and as an antagonist at the kappa receptor (Lewis, 1985). It is a safe and effective U. S. Food and Drug Administration-approved treatment for maintenance and detoxification of opioid-dependent patients (Johnson, Strain, & Amass, 2003; Ling & Wesson, 2003). A sublingual combination tablet containing buprenorphine and naloxone, called Suboxone (Reckitt Benckiser Pharmaceuticals), is the most common formulation prescribed for use in the United States as it discourages intravenous injection and lowers the likelihood of diversion (Fudala et al., 2003). It is prescribed by qualified physicians and administered by medical staff in primary care settings and within traditional licensed opioid treatment programs (Amass et al., 2004).

#### 3.1.1. CTN trial findings

CTN trials tested the effectiveness of buprenorphine/naloxone for short-term taper detoxification in residential and outpatient settings for opioid dependent patients. These trials showed that when compared to a clonidine taper group, significantly more patients who received a 13-day buprenorphine/naloxone taper provided opioid-negative urine samples at the end of the taper in both settings (Ling et al., 2005). Moreover, patients treated with buprenorphine/naloxone were more likely to complete their taper (Ling et al., 2005) and continue on to additional treatment (Brigham, Amass, Winhusen, Harrer, & Pelt, 2007). In another trial, patients were stabilized on buprenorphine/naloxone for 28 days and then randomized to an extended (28 days) or short-term (7 days) taper. The longer taper schedule did not significantly improve rates of opioid-free urine samples (Ling et al., 2009), lending additional support for the use of short-term buprenorphine detoxification protocols in community programs.

#### 3.1.2. Blending product

The blending team identified two requisites to promote buprenorphine adoption: (a) medical providers needed specific instruction in the short-term buprenorphine detoxification protocol, and (b) nonprescribing addiction professionals needed to learn more about the effectiveness of buprenorphine and the critical role they themselves could play in facilitating and supporting the treatment of patients receiving this medication. The team developed two products for these purposes. One product, *Short-term Opioid Withdrawal Using Buprenorphine* (Freese et al., 2006), targets medical providers likely to administer buprenorphine. It instructs providers how to administer the short-term buprenorphine/naloxone protocol for medically managed opioid withdrawal. It also describes opioid withdrawal, how to manage withdrawal symptoms, risks of overdose following detoxification, and program implementation issues. The second product, *Buprenorphine Treatment: Training for Multidisciplinary Addiction Professionals* (Freese et al., 2005), aims to educate nonphysician program staff and addiction professionals about buprenorphine and its use in the treatment of opioid dependence. In addition to curriculum materials for a face-to-face training, the product contains a computer-assisted self-paced CD-ROM course designed to heighten awareness and acceptance of buprenorphine treatment among frontline staff and to provide them with information about important counseling issues when this medication is part of their patients' treatment plans.

#### 3.1.3. Training

The buprenorphine blending team developed a training of trainers for these blending products. Attendee eligibility criteria included (a) working knowledge of medications used in addictions treatment; (b) experience treating patients who receive medications for their substance use disorders; and (c) experience teaching and training in addictions. A unique

feature of this training was the requirement that participants teach back some of the material throughout the training to help them master the curriculum and receive immediate feedback about their training skills. Some participants also cotrained the material with an expert blending product trainer at separate continuing education programs that followed the training of trainers sessions.

Since the release of both products, six 2-day trainings have been held in which 73 individuals have been prepared as trainers. Thirty-seven percent of the attendees were from CTN-affiliated treatment programs, and 63% were enrolled through an ATTC. They originated from 24 States and Puerto Rico. To date, buprenorphine product trainers have conducted 14 short-term buprenorphine detoxification trainings, which have included 543 participants from 41 States, Puerto Rico, and the U.S. Virgin Islands. During this same period, 98 buprenorphine treatment awareness trainings have occurred, with a total of 2,629 participants from 35 States, Puerto Rico, and the U.S. Virgin Islands (see Table 1).

### 3.1.4. Additional adoption and implementation supports

Following completion of the training of trainers, the buprenorphine blending team has provided technical assistance for adoption of buprenorphine in community programs. This assistance is intended to help programs address implementation barriers in the areas of policy, funding, and clinical use of buprenorphine. In addition, the blending team is creating a password-protected blog on the National ATTC Network Webpage to allow participants to discuss training issues, post questions, and engage in discussion about training content and strategies. Expert trainers from the team will monitor the blog to ensure accuracy and consistency of the information shared.

### 3.1.5. Product updates

Recently, a CTN trial (Woody et al., 2008) tested the effectiveness of buprenorphine among young adults (ages 15–21) with opioid dependence under two conditions: 12-week buprenorphine/naloxone group (taper beginning at week 9) and 14-day buprenorphine/naloxone taper. All participants received standard drug counseling over the 12-week period. The results indicated that patients in the 12-week group responded more positively to treatment in that at most assessment points, they had significantly more opioid-free urine samples, less injecting, and better treatment retention. These findings and guidelines for using buprenor-

phine with young adults were added to the *Buprenorphine Treatment* product in October 2009.

### 3.1.6. Product utilization and treatment adoption

Between May 2008 and August 2009, the National ATTC Web site downloads for the buprenorphine blending products (see Table 1) have averaged 122.1 per month ( $SD = 43.7$ , total = 1,710) for the short-term detoxification package and 540.4 per month ( $SD = 74.4$ , total = 7,566) for the treatment awareness product. The impact that the buprenorphine blending products and trainings have had on community program use of buprenorphine is unclear because no study has been conducted to specifically examine this relationship. However, since 2002, researchers from the Institute for Behavioral Research at the University of Georgia have been tracking buprenorphine adoption within and outside of the CTN. They have found that community programs within the CTN are two to three times more likely to have adopted buprenorphine than non-CTN programs (Ducharme, Knudsen, Roman, & Johnson, 2007; Ducharme & Roman, 2009). Closer examination of CTN-affiliated programs has shown programs that have participated directly in CTN buprenorphine trials are five to six times more likely to have adopted this treatment than programs that did not participate in the trials (Ducharme et al., 2007; Knudsen, Abraham, Johnson, & Roman, 2009). Furthermore, the percentage of CTN-affiliated programs that have adopted buprenorphine has doubled from 15.6% to 31.6% in a recent 2-year period, in large part as programs with no prior buprenorphine trial experience adopt the medication (Knudsen et al., 2009).

In September/October 2008, the buprenorphine blending team again surveyed CTN-affiliated program directors about their utilization of this medication and their staff training needs for its use (Brigham, 2008). Of 159 CTN programs, 85 (53%) responded, representing all 16 then-active CTN regions. Sixty-one percent indicated they provided buprenorphine treatment, suggesting that rates of buprenorphine use in CTN programs have continued to rise since 2006. Moreover, interest in having CTN-affiliated program staff trained in buprenorphine remains strong, with 47% and 65% of the program directors requesting training in short-term detoxification and in treatment awareness, respectively. Anecdotal data suggest that the main obstacles to buprenorphine adoption have been lack of medical personnel on staff to administer it, negotiating local regulatory requirements,

Table 1  
Addiction Technology Transfer Centers blending product training information and downloads

	Bup-Detox	Bup-TX	PAMI	MIA: STEP
Total number of training events	14	98	157	67
Total number of participants	543	2,629	3,621	1,182
Total downloads National ATTC Web site	1,710	7,566	937	5,268

Note. Blending products are the following: Bup-SD = Buprenorphine Short-term Detoxification; Bup-TX = Buprenorphine Treatment. Data documenting the number of blending project training events and participants come from the CSAT Services Accountability Improvement System. Downloads, tracked by the National Office of the ATTC, are from the National ATTC Web site located at <http://www.attcnetwork.org/explore/priorityareas/science/blendinginitiative/index>.

and covering the cost of medications. Active assistance to programs on these issues likely would be helpful in future buprenorphine adoption efforts (Ducharme et al., 2007).

### 3.2. Motivational incentives

Motivational incentives treatment, or contingency management, is a well-established empirically supported practice based on behavior modification principles. The treatment focuses on providing rewards to clients for desired behaviors (e.g., providing negative drug screens, attending treatment sessions, achieving recovery-related goals, paying overdue bills; Higgins, Silverman, & Heil, 2008). Rewards can vary from increased clinic privileges (e.g., Stitzer, Iguchi, & Felch, 1992), vouchers redeemable for goods and services (Higgins, Alessi, & Dantona, 2002), and the chance to draw from a fishbowl and win prizes of varying magnitudes and probabilities (Petry & Martin, 2002; Petry, Martin, Cooney, & Kranzler, 2000). This latter approach reduces implementation costs by lowering the maximum value of the prizes patients can earn. Incentives aim to develop reinforcers for behaviors incompatible with drug use, first through the rewards directly provided by the intervention and eventually through the naturally occurring benefits that accrue through abstinence (Higgins et al., 1994).

#### 3.2.1. CTN trial findings

Two large-scale CTN trials tested the effectiveness of the fishbowl method of motivational incentives in methadone maintenance and outpatient psychosocial counseling programs among stimulant-dependent patients. This particular approach to incentives was selected because of its greater likelihood of long-term feasibility and sustainability in community programs (Stitzer & Kellogg, 2008). The results showed that when compared to a standard drug counseling group, methadone maintenance patients in the incentives group had a significant increase in stimulant-free urine samples and a longer duration of abstinence over the 12-week course of treatment (Peirce et al., 2006). Among psychosocial counseling patients, those who received incentives had significantly higher rates of program retention and longer periods of stimulant abstinence than those who received standard drug counseling only (Petry et al., 2005). Further, exposure to the prize draw incentive procedure did not increase gambling behavior (Petry et al., 2006), which had emerged as a concern to prospective adopters as noted below.

#### 3.2.2. Blending product

Early in the development of the CTN motivational incentives trials, it became clear that program directors and counselors articulated multiple concerns about the use of this treatment. Concerns included expectations of high costs (magnitude and frequency of rewards, urine screens, staffing), clinical issues (e.g., worries about increased gambling), philosophy (e.g., appropriateness of paying patients for “what they should be doing”), and even

uncertainty about behaviors to target for reinforcement (primary drug vs. total abstinence, drug use vs. program attendance or treatment goals; Stitzer & Kellogg, 2008). The blending team members understood that these and other concerns about incentive programs permeated the addiction treatment system (cf., Kirby, Benishek, Dugosh, & Kerwin, 2006) and if not addressed would be major barriers to adoption and implementation.

On the basis of these considerations, the blending team developed *Promoting Awareness of Motivational Incentives* (PAMI; Albright et al., 2006). The curriculum specifically addresses concerns commonly held by program staff about using this approach as a means to help them develop more positive attitudes toward incentives and increase the chance that programs might adopt this treatment in practice. It presents details of the CTN trial results and more broadly describes successful ways in which motivational incentives have been used in community programs. The package includes an instructional CD-ROM; a training video featuring researchers, providers, and patients who have experience with the approach; and materials to support implementation (e.g., brochures, customizable documents, PowerPoint presentations).

#### 3.2.3. Training

Two trainings of PAMI trainers have occurred. To be eligible, attendees had to (a) have experience counseling, teaching, and training in addictions and (b) review all PAMI materials prior to the training, with special attention paid to behavioral principles that guide the use of incentives (e.g., rewarding the target behavior immediately when it is performed). Participants practiced presenting PAMI topics in the training and gained hands-on experience using the fishbowl method. The training was expanded to a 2-day event (from 1-day) after the initial training indicated that participants needed more time to master the curriculum.

Since 2007, 55 individuals have become PAMI trainers. Thirty-eight percent of the attendees were from CTN-affiliated treatment programs, and 62% were enrolled through an ATTC. Trainers are located in 31 States and Puerto Rico. One hundred fifty-seven trainings have been held (see Table 1) involving 3,621 participants from 41 States, Puerto Rico, and the U.S. Virgin Islands.

#### 3.2.4. Additional adoption and implementation supports

The PAMI trainers' success in raising interest in motivational incentives often led to a desirable result: Treatment program directors and counselors wanted help in developing their own incentives programs. The blending team realized that similar questions and requests for materials and information were occurring and that many programs, now well aware of motivational incentives, needed a consistent and readily available source for implementation support. In addition, trainers were witnessing successful implementation efforts and felt these stories could inspire others to adopt motivational incentives. In

response, the blending team developed a Web site focusing on motivational incentives. The Web site, launched in April 2010, features news and updates about incentives programs, hosts an interactive discussion board, and provides downloadable resources and training materials. The blending team plans to use this Web site to offer community providers online training and readily available technical assistance to implement motivational incentives.

### 3.2.5. Product updates

One significant barrier to adopting motivational incentives arose soon after the PAMI product was developed. The Offices of Medicaid Management in several States expressed concern that incentives for patients in state-funded community programs might be considered to be Medicaid fraud. To clarify this issue, one CTN-affiliated program formally requested that the U.S. Department of Health and Human Services Office of the Inspector General (OIG) render an advisory opinion. To offer empirical support for motivational incentives as a clinical intervention, the community program cited findings from the NIDA CTN trials and provided the OIG with the PAMI product. The OIG released its opinion on October 2, 2008 (see <http://oig.hhs.gov/fraud/docs/advisoryopinions/2008/AdvOpn08-pdf>). The opinion stated that the motivational incentives program, as implemented by the requestor agency, did not constitute grounds for imposition of civil monetary penalties and that the OIG would not impose administrative sanctions on the program's use of motivational incentives as described by the agency requesting the opinion. PAMI trainers now share this information with publicly funded program administrators and Single State Authorities to allay concerns about possible sanctions by Medicaid for using program funds to pay for such incentives.

### 3.2.6. Product utilization and treatment adoption

ATTC Web site downloads from May 2008 to August 2009 for the PAMI blending product have averaged 66.9 per month ( $SD = 26.1$ ), totaling 937 (see Table 1). The extent to which the PAMI product and trainings have promoted community program adoption of incentives has not been tested. Nonetheless, as of mid 2004, about one third of community programs within and outside of the CTN reported that they had adopted motivational incentives (Ducharme et al., 2007). In June/July 2009, the motivational incentives blending team surveyed CTN-affiliated program directors about their current use of motivational incentives and perceived training needs (Higgins & Hulsey, 2009). Of 159 program directors, 60 responded (38%), representing 12 of the 16 active CTN regions. Forty-six percent of the programs indicated they had implemented motivational incentives treatment (mostly fishbowl or voucher methods using gift cards as the incentives), with all but 3 continuing to use this treatment, suggesting the possibility of a slight upturn in CTN program adoption of incentives in the past 5 years. Among programs that had not implemented incen-

tives, the biggest implementation barriers were securing funding (60%) and lack of staff training (45%). Thirty-five percent of the program directors requested motivational incentives training by PAMI trainers.

## 3.3. Motivational interviewing

Motivational interviewing is a brief intervention that combines empathic counseling techniques (such as reflective listening) and strategies for eliciting client self-motivational statements (e.g., asking clients about the benefits of change) to build clients' intrinsic motivation and commitment to positive behavioral change (Miller & Rollnick, 2002). Motivational enhancement therapy is a manualized adaptation of this approach that includes a formal feedback intervention as part of the interview (Miller, Zweben, DiClemente, & Rychtarik, 1992). Several meta-analyses have shown that these motivational approaches consistently show small to moderate clinically meaningful treatment effects for substance use disorders across clinical trials (Burke, Arkowitz, & Menchola, 2003; Hettema, Steele, & Miller, 2005; Lundahl, Tollefron, Gables, Brownell, & Burke, in press).

### 3.3.1. CTN trial findings

Several CTN trials tested the effectiveness of motivational interviewing and motivational enhancement therapy. One trial examined the effectiveness of a one-session motivational interviewing assessment (Carroll et al., 2006). Two trials studied the effectiveness of a three-session motivational enhancement therapy, one conducted in English (Ball et al., 2007) and the other delivered entirely in Spanish to monolingual Spanish-speaking clients by bilingual counselors (Carroll et al., 2009). Results of these trials showed that the one-session motivational interview assessment resulted in significantly better 4-week client retention and reduced days of primary substance use in participants whose primary substance was alcohol rather than drugs (Carroll et al., 2006). Outcomes in the three-session English and Spanish trials were similar in that the motivational enhancement therapy resulted in sustained reductions in primary drug use during the 12-week follow-up phase of the studies, whereas the counseling-as-usual condition was associated with increases in substance use over this follow-up period, although the findings were strongest in the English trial (see Ball et al., 2007, and Carroll et al., 2009).

### 3.3.2. Blending product

Because an extensive training network for motivational interviewing already existed (see <http://www.motivationalinterview.org>), the blending team developed a product to support local program-based supervision of motivational interviewing practice to enhance counselors' adherence to the treatment and maintain competence in using its strategies following initial training. The product, called Motivational Interviewing Assessment: Supervisory Tools

for Enhancing Proficiency (MIA: STEP; Martino et al., 2006), adapted the methods utilized to train clinical supervisors during the CTN trials. A central component is a guide for using a performance rating scale to provide feedback to counselors about how well they use motivational interviewing and to coach them to further improve their skills. The package also contains demonstration materials (e.g., audio recorded sessions with accompanying rated transcripts), supervisory teaching tools, a supervisor training curriculum, and results from the one-session trial (results from the three-session trials were not available at the time of the blending product's development).

### 3.3.3. Training

As with the buprenorphine and PAMI blending products, a train-the-trainer approach was developed to disseminate MIA: STEP. Trainer applicants were required to have previous training and experience using motivational interviewing in the addictions field. In fact, to be accepted into the training, applicants had to demonstrate at least a modest standard of motivational interviewing capability, as assessed by motivational interviewing experts who evaluated an audio recording of a client session using established rating systems (Martino, Ball, Nich, Frankforter, & Carroll, 2008; Moyers, Martin, Manuel, Hendrickson, & Miller, 2005). The workgroup thought it reasonable to require objective evidence of motivational interviewing skills for individuals who would be training others how to supervise the approach, particularly because self-reported proficiency is frequently inaccurate (Miller, Yahne, Moyers, Martinez, & Pirritano, 2004). In addition, this procedure would provide trainers with a parallel experience of receiving rating-based feedback, much like what occurs in MIA: STEP. Eighty percent of applicants demonstrated sufficient proficiency. Since 2006, 93 individuals (38% from CTN-affiliated programs and 62% enrolled through an ATTC) have been prepared as MIA: STEP trainers through a series of three 2.5-day training of trainers. Trainers are located in 32 States and Puerto Rico. Sixty-seven ATTC-sponsored trainings have occurred, reaching a total of 1,182 supervisors from 28 States, Puerto Rico, and the U.S. Virgin Islands (see Table 1).

The blending team surveyed the trainers in September 2008 and August 2009 (both with 90% response rates) to determine the overall amount of MIA: STEP training activity, given that a number of trainings had been offered independently and were not ATTC-sponsored events (Martino, 2009a). The survey found that 41 trainers (61%) had conducted a total of 117 MIA: STEP trainings, reaching 1,767 supervisors across 31 states, Puerto Rico, U.S. Virgin Islands, and Guam. Trainers reported that the largest barrier to disseminating MIA: STEP was insufficient competence of supervisors in actual motivational interviewing practice. In fact, at 73 of the 117 MIA: STEP trainings (62%), trainers had to teach motivational interviewing skills to supervisors prior to training them in supervision skills.

### 3.3.4. Additional adoption and implementation supports

The Mid Atlantic ATTC supports a MIA: STEP trainer list serve to enhance communication and resource exchanges among the trainers. Research finding updates, innovations in teaching MIA: STEP, requests for trainer assistance, training experiences, and questions (e.g., rating issues, restructuring trainings due to time constraints) are exchanged on the list serve.

### 3.3.5. Product updates

More recent findings from the English and Spanish motivational enhancement therapy trials (Ball et al., 2007; Carroll et al., 2009) and other secondary analyses have been integrated into the MIA: STEP training curriculum. In particular, trainers and supervisors have found results of the trials' secondary analyses to be useful in training MIA: STEP: (a) the rating scale used in MIA: STEP has been found to be reliable and valid (Martino et al., 2008; Santa Ana et al., 2009); (b) training and supervision in motivational interviewing using MIA: STEP methods may suppress informal counselor-initiated discussions unrelated to the clients' treatment (Martino, Ball, Nich, Frankforter, & Carroll, 2009a); and (c) supervisors can be trained to use performance rating scales with reasonable reliability and validity (Martino, Ball, Nich, Frankforter, & Carroll, 2009b).

### 3.3.6. Product utilization and treatment adoption

Downloads of MIA: STEP from May 2008 to August 2009 have averaged 376.3 per month ( $SD = 130.2$ ) on the national ATTC Web site (total = 5,268). MIA: STEP also was posted on [www.motivationalinterview.org](http://www.motivationalinterview.org), a popular Web site that hosts comprehensive information about motivational interviewing and the Motivational Interviewing Network of Trainers. From May 2008 through August 2009, a total of 517,778 downloads of MIA: STEP have occurred, averaging about 32,361 downloads per month ( $SD = 23,158.9$ ; personal communication with M. Whitesides, Mid Atlantic ATTC, August 28, 2009). To our knowledge, no published data exist about the extent of motivational interviewing treatment adoption occurring in community programs, nor has the blending team conducted a survey of CTN-affiliated programs about their use of this approach.

### 3.4. Blending initiative training participant satisfaction

Thirty-eight percent of the participants ( $n = 3,070$ ) at the ATTC blending initiative trainings completed the CSAT Customer Satisfaction Tool at the conclusion of the training event. Eight percent ( $n = 658$ ) completed the 30-day posttraining survey that asked participants if they had applied the knowledge obtained from the trainings to their work. Ninety-four percent of the participants indicated they were satisfied or very satisfied with the training experience, and 95% responded they were satisfied or very satisfied with the quality of the event. Eighty-two percent of the par-

ticipants reported they had applied what they had learned at the trainings to their work.

#### 4. Discussion

The CTN, through its involvement in the NIDA-SAMHSA Blending Initiative, has made progress over the past 10 years in transferring its research findings to community treatment programs providers and their patients. First, exposure to CTN-tested treatments (buprenorphine, motivational incentives, motivational interviewing) through affiliation with the CTN or from direct trial experience seems to increase the likelihood that programs adopt these treatments into routine practice (Ducharme et al., 2007; Ducharme & Roman, 2009; Knudsen et al., 2009). Second, blending teams composed of CTN researchers and practitioners and ATTC technology transfer experts have developed popular blending products that are frequently downloaded from Web sites, suggesting that these products are of considerable interest to the professional community. Third, treatment-specific blending teams have collectively trained 221 trainers for the associated blending products, and together, these trainers have conducted 336 ATTC-sponsored trainings involving 7,975 participants across most States, Puerto Rico, and the U.S. Virgin Islands, with additional trainings happening outside the ATTC network. Further, the reports of high rates of participant training satisfaction and application of training knowledge at work, as well as continued community program interest in having staff trained to deliver buprenorphine, motivational incentives, and motivational interviewing interventions using the blending products, are highly encouraging. Fourth, as awareness about these treatments has become more widespread, the blending teams have begun to shift focus to activities that increase support of practical implementation, such as the creation of technical assistance services, interactive Web sites, blogs, and list serves.

The extent to which the Blending Initiative's partnerships and dissemination pathways are accelerating the technology transfer process remains unclear. Knudsen et al. (2009) have studied this question indirectly by examining patterns of buprenorphine adoption in community programs. They showed that adoption of buprenorphine more than doubled in CTN-affiliated programs between 2004 and 2006, although the contribution of the buprenorphine blending project to program adoption was not examined. Future research is needed to determine the degree to which the Blending Initiative methods significantly promote specific treatment adoption and implementation. At least one such effort is currently underway. Martino (2009b) is conducting a multisite randomized clinical trial to test the effectiveness of supervising counselors in motivational interviewing using MIA: STEP. This study aims to determine what impact MIA: STEP supervision has on clinicians' fidelity to motivational interviewing and their clients' outcomes when using

motivational interviewing during an intake session. Assessment of the fidelity with which program-based supervisors use MIA: STEP, as well as organizational, clinician, and client factors influencing treatment implementation are key components of this study.

Clearly, a multitude of factors not formally related to CTN structure or Blending Initiative mechanisms influence the technology transfer process (Simpson & Flynn, 2007). For example, among CTN-affiliated programs, for-profit programs and those offering inpatient detoxification services were more likely to adopt buprenorphine, irrespective of buprenorphine trial participation (Knudsen et al., 2009). Other investigators have found greater support for CTN-affiliated program adoption of buprenorphine and motivational incentives in programs where staff perceived more programmatic need for improvement and had better Internet access (Fuller et al., 2007). These findings point to the fact that active and explicit dissemination efforts such as the Blending Initiative must take into account site-specific organizational factors and implementation obstacles in order for technology transfer to succeed. This process may involve extending the dissemination pathways of the Blending Initiative within the CTN to other dissemination efforts designed specifically for these purposes. For example, the New England ATTC developed a Science to Services Laboratory to promote program implementation of motivational incentives (Squires, Gumbley, & Storti, 2008). In this effort, ATTC technology transfer specialists were assigned to participating programs and established staff "champions" of incentives. Regional trainings of program staff followed, which exposed them to motivational incentives using the PAMI product as part of this process. Subsequently, the ATTC specialists worked collaboratively with these champions to solve site-specific implementation problems. Twenty-six of 28 programs that fully participated in the laboratory adopted motivational incentives into their clinical practices (Squires et al., 2008).

Additional efforts within the CTN have been initiated to transfer addiction research into practice. The CTN Dissemination Library (<http://ctndisseminationlibrary.org>) is a repository of CTN trial resources (journal articles, treatment manuals, scientific and general audience presentations, blending products, trial data), which are available free of charge to providers, policy makers, and researchers. Biennial national 2-day Blending Conferences, co-organized by NIDA and a local CTN regional center, feature presentations and workshops by researchers and providers about the effectiveness of treatments, training in how to use them, information about the blending products, and implementation issues (Condon et al., 2008). Periodic smaller dissemination workshops have been co-organized by local CTN and ATTC regional centers to promote local adoption of evidence-based practices and staff training, often including the use of the blending products. In addition, a National Registry of Blending Product Trainers is being developed by NIDA/SAMHSA and will be posted on the National ATTC website. Finally, CTN staff, researchers, and program providers

frequently participate in regional and national meetings of counselors (National Association of Alcoholism and Drug Abuse Counselors), state directors (National Association of State Alcohol and Drug Abuse Directors), and state policy makers (SAMHSA/CSAT State Systems Development Program), as well as other professional meetings and conferences to increase awareness about CTN study findings and blending products and to identify strategies to accelerate the adoption of evidence-based treatments.

One striking lesson learned through the CTN's participation in the Blending Initiative is the importance of tapping into existing dissemination pathways that are heavily utilized by researchers and practitioners as mechanisms of technology transfer. Posting the MIA: STEP blending product on the popular motivational interviewing Web site, which hosts the international Motivational Network of Trainers, has resulted in more than half a million downloads of the product in less than a year and a half. In contrast, posting this same product on the National ATTC-sponsored Web site resulted in 5,268 downloads during the same period. Other active streams of product dissemination might be useful for the transfer of CTN trial findings and treatments, such as providing the existing pharmaceutical marketing and sales networks with the buprenorphine blending products to promote the use of this medication. In cases where natural pathways or resource centers do not exist for particular treatments, these may have to be developed, as in the example of the ATTC network establishing a motivational incentives website.

Another lesson learned from the Blending Initiative is the need for evidence-based training for evidence-based treatments. Blending product dissemination primarily has relied upon a train-the-trainer model. This model offers the advantages of increased capacity to disseminate training and establish local expertise and capacity to adapt training materials to the settings in which the products/treatments will be used. However, standards for selecting and developing trainer skills are unknown. For example, prospective MIA: STEP trainers had to first demonstrate their capacity to use motivational interviewing as directly observed and objectively evaluated by experts, with 20% of applicants not meeting even modest standards of performance. Buprenorphine and motivational incentives blending products trainees immediately began to teach parts of the curriculum in order for experts to evaluate their capacity to conduct trainings in the field. The extent to which these efforts sufficiently prepared trainers to effectively develop the providers' positive attitudes toward the treatments and promote adoption and high-quality implementation of treatments remains unknown. Experimental evaluation of the train-the-trainer approach in the addictions field has not yet occurred despite its widespread use as a vehicle for treatment dissemination.

#### 4.1. Limitations

This report about the CTN's participation in the Blending Initiative has several limitations. It relies upon

self-reported data of ATTC regional directors, training participants, and agency directors, all subject to response and recall bias. Response rates were low for blending team surveys of treatment adoption and training interest and ATTC satisfaction surveys. In addition, the available data are sparse and do not evaluate competencies of trainers, the skills acquired by practitioners and their sustainability over time, or the impact of these efforts on clients outcomes—all important indicators of the success of the Blending Initiative. Moreover, the observations made about progress of the Blending Initiative in the CTN are limited to the three treatment models for which blending initiatives have been launched. The extent to which future blending initiatives for other treatment approaches will result in similar levels of training activity, product utilization, and treatment adoption remains unclear. Finally, systematic controlled evaluations of the effectiveness of the blending initiatives for technology transfer have not yet been undertaken. These types of studies will provide more certainty on the progress made by the blending initiatives in bringing evidence-based treatments into practice.

#### 4.2. Future directions and conclusions

The CTN has been a vital conduit for disseminating effective addiction treatments to community programs and their patients, in large part through its participation in the NIDA-SAMHSA Blending Initiative. The collaboration between CTN researchers, practitioners, and ATTC technology transfer experts has resulted in the development and distribution of several blending products and widespread training of community program providers to deliver CTN-tested treatments or supervisory methods to support their implementation. Further, the movement within the blending initiatives to provide additional support for ongoing implementation of these treatments is encouraging. In the future, NIDA plans to convene a Blending Initiative Task Force composed of researchers, community treatment providers, CTN and ATTC technology transfer experts, and NIDA and SAMHSA staff to serve as advisors to the Blending Initiative. This task force will meet regularly to identify research for potential Blending Initiative products such as computer-based behavioral treatment approaches as well as recommend potential dissemination strategies and implementation supports. In addition, NIDA will continue working with policy makers through the National Association of State Alcohol/Drug Abuse Directors and convene regional Single State Authority Blending meetings in various locations across the country to promote dissemination and implementation of completed blending team products. As [Fixsen et al. \(2005\)](#) have emphasized, without attention to the multiple components that comprise the implementation process following a program's treatment adoption, efforts to disseminate effective treatments are likely to result in ineffective practices.

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