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J Drug Issues. Author manuscript; available in PMC 2010 February 1.

Published in final edited form as:
J Drug Issues. 2008 ; 38(4): 1083.

The Place of Adoption in the NIDA Clinical Trials Network

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Abstract

The National Institute on Drug Abuse (NIDA) Clinical Trials Network (CTN) was established in 1999 to determine effectiveness of drug abuse treatment interventions among diverse client populations and settings. To address dissemination of research findings, the CTN also has as its mission the transfer of research findings to treatment providers. In a qualitative study of adoption of evidence based practice in the context of two CTN clinical trials, we interviewed 29 participants from seven organizational levels of the multisite study organization about post-trial adoption, their role in the clinical trial, and interactions between the research initiative and clinic staff and setting. Analysis of interview data revealed a range of opinion among participants on the place of adoption within the CTN. Innovation within the CTN to support adoption and further observational research on dynamics of adoption within the CTN can increase dissemination of evidence-based drug abuse treatment interventions in the future.

Introduction

Adoption of effective interventions for drug abuse treatment is a promising, and yet challenging path to advancement in the field of drug abuse treatment. As behavioral and pharmacological research yield evidence and as products are developed, broad adoption of new tools for drug abuse treatment remains elusive (Glasgow et al., 2003; McLellan and McKay, 1998). Although select evidence-based practices are making their way into clinician tool boxes, the gap between developments in research and application for practice persists as a dominant theme in this chronicle of change. Everett Rogers' lifetime work on diffusion processes (Rogers, 2003) produced a wide-ranging theoretical map on diffusion and led scholars into a multi-dimensional conceptual exploration, applicable to the subject of adoption of evidence-based practice in drug abuse treatment. Commenting on the study of diffusion, Rogers noted the "need to move beyond the proven methods and models of the past…to broaden conceptions of the diffusion of innovations" (Rogers, 2003, p. xxi). In an effort to expand our conceptions on innovation in drug abuse treatment, this paper focuses on the place of post-trial adoption of evidence-based practices in the context of the National Institute on Drug Abuse (NIDA) Clinical Trials Network (CTN). We also explore perspectives on the merits of including adoption as a goal of the CTN and as part and parcel of clinical trials conducted on drug abuse treatment interventions in general.

The 1998 Institute of Medicine Report (Lamb, Greenlick, McCarty, 1998) on the substance abuse research-practice "gap" described the failure of treatment research to address problems of interest to treatment providers, and noted that treatment providers often do not integrate and use evidence-based practices in their clinical practice. Among recommendations to enhance treatment practices and increase the relevance of substance abuse research to providers, was that NIDA and the Center for Substance Abuse Treatment (CSAT) establish a structure to support research in community-based treatment programs (Lamb et al., 1998). CSAT responded through development of Practice Improvement Collaboratives across the U.S. to support partnerships between treatment programs and researchers at the local or regional level (Clark, 2002), and in 1999, NIDA began development of the CTN.

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Science to Practice

Research examining determinants of adoption of evidence-based practices in drug abuse treatment has yielded varying perspectives and strategies on how to move the field forward to wider use of these practices. In theoretical and research reports, investigators have described domains of influence on a substance abuse treatment program's decision to adopt a research-based treatment intervention (Rogers, 1995; Lamb et al., 1998; Backer, 1995). Other investigators have examined clinical practice issues related to readiness for adoption (Ball et al., 2002), researcher-clinician philosophical differences (Morgenstern, 2000), post-training practice change (McCarty, Rieckmann, Green, Gallon & Knudsen, 2004), the capacity of staff "opinion leaders" to affect change (Moore et al., 2004), and the ability of an organization to seek and utilize information, known as "absorptive capacity" (Knudsen & Roman, 2004).

In their qualitative study of adoption of Behavioral Couples Therapy (BCT) three-to five years after conclusion of five multisite clinical trials, Fals-Stewart and colleagues found adoption had occurred in only one of the settings and noted: "simply placing the tool in the toolbox does not mean it will be used" (Fals-Stewart, Logsdon & Birchler, 2004, p. 178). Barriers to adoption in the four settings occurred at the patient level, the counselor-supervisor- administration level, and at the level of system dynamics. Research examining measures of adherence to standardized interventions represents yet another step to ensure appropriate and competent high-quality transfer of technology (Moyers, Martin, Manuel, Hendrickson & Miller, 2005). Investigators have described socially-based determinants of adoption in drug abuse treatment including workplace turnover (Gallon, Gabriel & Knudsen, 2003), instability of state funding (Gabriel, 2003), and financial incentives for drug treatment counselors (Andrzejewski, Kirby, Morales & Iguchi, 2001).

Knudsen and colleagues (2007) compared CTN-affiliated counselors to non-CTN affiliated counselors in both private and public sector treatment settings on their ratings of buprenorphine acceptability as a tool in their own professional "tool bag." Findings indicated that exposure to buprenorphine through training and clinical practice was a significant predictor of receptiveness to its use among both private setting counselors and public setting counselors. In a study of innovation by clinicians inside and outside the CTN structure, Ducharme and colleagues (2007) also examined exposure as an influencing factor for later adoption of motivational incentives and the use of buprenorphine by practitioners. Findings indicated that direct exposure to buprenorpine in the clinical trial context significantly increased odds for adoption, whereas adoption of incentives was wholly determined by organizational factors, including modality, revenue source, profit vs. non-profit status, and accreditation.

Other perspectives on the question of fostering adoption propose methodological revisions within drug abuse treatment intervention research (Glasgow et al., 2003; Carroll and Rounsaville, 2003). The aim of these proposed methods is to unpack and examine variables and dynamics influencing treatment effectiveness with the secondary result of producing data on conditions for adoption. Glasgow et al., for example, called for a greater focus on "the social context in which experiments are conducted" and recommended strategies for inclusion of methods to study adoption dynamics as a part of efficacy and effectiveness studies. They recommend examination of the research settings, staff characteristics, and other "moderating variables" in efficacy trials and also suggest that hypotheses on moderator variables be elevated to primary aims of research (Glasgow et al., 2003). Likewise, Carroll and Rounsaville (2003) suggest a "hybrid" model of effectiveness research, designed to retain elements of efficacy trials while asking other questions of importance in tests of effectiveness. They propose an expanded research model to include examination of the setting, clinicians and patients, cost-effectiveness, training issues, and client and clinician satisfaction. The authors note that data on these elements are critical to understanding the dynamics of external validity. As the authors indicate, promotion of this model is a call for the study of feasibility and

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acceptability of the intervention, and an invitation to explore select attributes of interventions, a variable in the process of innovation and adoption.

The NIDA CTN

The mission of the CTN is to "improve the quality of drug abuse treatment throughout the country using science as the vehicle" (NIDA, 2007a). The CTN supports an initiative in which NIDA treatment researchers and community based treatment providers collaborate to develop, test, refine, and provide new treatments to clients who are enrolled in substance abuse treatment programs. Objectives of the CTN include: "1) conducting studies of behavioral, pharmacological, and integrated behavioral and pharmacological treatment interventions of therapeutic effect in rigorous multi-site clinical trials to determine effectiveness across a broad range of community-based treatment settings and diversified patients populations; and 2) ensuring the transfer of research results to physicians, clinicians, providers, and patients" (NIDA, 2007a).

Currently, the CTN includes 17 research nodes and more than 100 clinical treatment programs across the U.S. with a to-date enrollment of over 7, 500 client participants into 30 CTN research protocols that are in various stages of completion (NIDA, 2007b; Sorensen, 2007). Results from clinical trials of numerous interventions are now available including reports on motivational interviewing (Carroll et al., 2006), buprenorphine (Ling et al. 2005), and contingency management (Petry et al., 2006; Pierce et al., 2006), among others. A number of papers discuss aspects of the CTN including the practice research collaborative (Santisteban, Suarez-Morales, Robbins & Szapocznik, 2006; Miller, Bogenshultz, & Villareal, 2006), incorporating stakeholders into the CTN decision-making process (McCarty, Zammarelli, Wylie & Greenlick, 2005); clinician and staff issues (Ball et al., 2002; Forman, Bovasso & Woody, 2001); and challenges in research and treatment partnerships (Marinelli-Casey, Domier & Rawson, 2002; Polcin, 2004).

The CTN supports transfer of tested interventions into clinical practice through its cooperation with the Addiction Technology Transfer Center (ATTC) Network. Initiated in 1993 and funded by the Substance Abuse and Mental Health Services Administration (SAMHSA), the ATTC Network consists of 14 regional Centers serving every state in the U.S., the District of Columbia, Puerto Rico, and the U.S. Virgin Islands and Pacific Islands. The ATTCs support workforce development for the field at large through trainings, delivering data and tools for "on the ground" transmission and application of research findings in treatment settings. In 2001, the CTN and the ATTC Network formed a partnership called the "NIDA/SAMHSA-ATTC Blending Initiative," comprised of Blending Teams that collaboratively "develop a strategic plan and products" for dissemination of NIDA-sponsored research findings (NIDA, 2007c). To date, products developed by the Blending Teams include tools for field application of buprenorphine treatment, use of the Addiction Severity Index (ASI), and application of Motivation Interviewing. Adoption studies are clearly needed, but what are fitting venues for examining adoption and conditions favoring clinician adoption of evidence based practices? In the current qualitative study of adoption in the context of clinical trials research, we had the opportunity to examine informants' views on the appropriateness of adoption as an objective of the NIDA CTN. Here we present data from that study to explore perspectives of respondents, circa 2003–2004, on the question of adoption as an aim in the context of the NIDA CTN.

Methods

The Multi-level Assessment Protocol (MAP) Study of Adoption

The present study was designed to examine adoption in the context of two multisite clinical trials. In the first phase of the MAP study, we examined issues related to adoption near and

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after completion of the Methamphetamine Treatment Project (MTP), a three-year study of effectiveness of a cognitive-behavioral intervention (Matrix), funded by the Center for Substance Abuse Treatment (Guydish, Turcotte Manser, Jessup, Tajima & Sears, 2005). In the second phase of the MAP study we investigated adoption near and after completion of the NIDA CTN randomized clinical trial of Motivational Interviewing (MI) and Motivational Enhancement Treatment (MET) which examined the effect of MI/MET on treatment engagement and retention (Carroll et al., 2006).

Study sample and recruitment

Participants were representative of seven levels of the broad organizational structure of the CTN, including three clinic levels at each of the five participating study sites. Participants were at the levels of clinician, clinical supervisor, clinic or program director, regional investigator, and protocol design team members (protocol team leaders, intervention designer, and funder) (see Table 1). All participants were identified as having a leadership role in the design, planning, or implementation of the protocols within the CTN. The 29 participants included 14 women and 15 men with varied levels of education (three had some college attendance, two had Bachelors degrees, nine had Masters degrees, eight had doctoral degrees, two were physicians, and for five participants, the educational status was unknown).

At the clinician level, informants consisted of one clinician who delivered the experimental intervention and one clinician who had delivered the treatment-as-usual. When more than one clinician from either condition was available, the clinic director identified the individual(s) who had participated in the protocol the longest. In cases where clinic level informants had left the clinic, contact information was requested and these former employees were invited to participate. Eleven CTN clinics participated in the MI/MET study. Due to cost and logistic constraints, the current study was limited to five of the 11 sites, and all five sites were located in the western region of the U.S.

Participants were first contacted by mail, with telephone follow-up to assess their willingness to participate. Interviews were then scheduled, and informed consent procedures completed prior to each interview. Three participants (two counselors and one clinical supervisor) who had left their site were located and contacted using the same procedures. Among those invited into the study, one person declined and one failed to respond to recruitment contacts. Clinics were offered $1000 for study participation, either a lump sum payment to the clinic's fiscal entity or individual payment of interviewees. The Clinic Director selected the reimbursement option and all but one of the clinics selected the lump sum payment to the clinic. In the clinic that declined the lump sum payment, individual respondents received a payment incentive. Respondents who had been formerly employed by a clinic but who had since left employment there could not use the clinic payment for their time invested in completing the interview, so these participants received a $50 cash reimbursement. Regional investigators and protocol design team members were not offered financial incentives as these respondents were remunerated for their efforts in the context of the MI/MET study award. The study participants provided informed consent, and were in accord with and approved by the University of California, San Francisco Committee on Human Research.

Data collection

Semi-structured interview guides (available from first author), were developed by the study team and informed by organizational theory reflective of domains of influence on adoption of research-based interventions (DeSmet, 1998; Burke & Litwin, 1992; Lamb et al., 1998; Rogers, 2003; Backer, 1995). Interview guides included questions concerning perspectives on the clinical trial and its interactions with clinics, the respondent's role in the MI/MET study, and

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adoption of MI/MET. Audio-taped interviews lasted 1 to 2 hours each with 25 conducted in person, and 4 conducted by telephone.

MI/MET study recruitment, completed in different clinics at different times, ended in all participating clinics by mid-February 2003. Most of the data collection for the current study was conducted between February, 2003 and June 2004, and the interviews were conducted on average nine months after recruitment at all sites had concluded, with the exception of one interview conducted three months prior to that point. The study plan was to interview participants close to the time when clinics stopped delivering MI/MET treatment for study purposes, and after some time had elapsed in which clinics could have decided whether to continue to provide MI/MET treatment in their settings. Beyond these general considerations, the actual timing of interviews was determined by when the MI/MET clinical trial was funded, and by the logistics of planning and conducting interviews in multiple study sites.

Analysis

Interviews were transcribed, read for completeness compared to the audiotapes, reviewed, and discussed by the research team members. Analysis was conducted using a theoretical analytic framework (Bulmer, 1979; Miles & Huberman, 1994) informed by research literature on organizational functioning and change theory. The framework, composed of organizational domains, allowed for use of these domains as categories for analysis and examination of participants' perspectives on organizational functioning, including adoption, during and after participation in a randomized clinical trial. Analytic categories included organizational structure and culture, attitudes toward research, perception of intervention, readiness for change, resources, dissemination of study results and adoption. Closed codes were initially developed utilizing these broad coding categories. As content analysis proceeded, team members wrote and discussed numerous analytic memos to clarify and stimulate conceptualization, for development of new codes, and to build cohesion between existing codes (Miles & Huberman, 1994; Boyle, 1991).

Two team members (SM, BT) coded interviews using ATLAS.ti.4.2^{TM} analytic software. Inter-rater reliability was established by first coding 14 interviews as a team to obtain agreement, then having two team members independently code five interviews with review by a third team member for consistency. A total of 64 codes emerged, and transcripts were coded using those codes. As the research proceeded, the codebook was refined and all data of each code discussed by all team members. On-going discussion of the data, member checks, and constant comparison were used to ensure trustworthiness of the data. Simultaneous data collection and analysis ensured dependability, and in the interpretation phase of analysis, team member reflexivity regarding participant narratives was also a source of data and enhanced trustworthiness (Creswell, 1994; Lipson, 1991; Lincoln & Guba, 1985).

Results

We report participant's reflections on adoption in the context of the CTN. These key informants from different sites discussed their views on the place of adoption in the CTN at the time of CTN inception, the mission of the CTN, adoption practices of drug abuse treatment staff in the field in general, training, barriers to clinician adoption, and their views on the future of the CTN in relation to adoption. As the CTN approaches its tenth year, the data also provide an historical lens through which to view the place and status of adoption currently, given effects of history, growth and development of the CTN, and knowledge accumulation on outcomes and processes related to adoption. After the quotation of each speaker, the organizational role of the respondent is provided.

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Inception of The NIDA CTN and Adoption

Participants discussed the inception of the CTN, their recollections of discussions that took place early in the development of the CTN and their perspectives on its mission and function relative to adoption:

> I don't ever remember people talking too much about the adoption part of it in CTN design. It was mostly just gettin' the research done… I don't remember very much conversation about developing a protocol that lends itself to transition right into adoption…most of the people developing the protocol probably may not have had much experience in implementation. And these are two different worlds. The research world and the discovery world…finding out new information, and then applying that information into the field, are really different worlds. And many times, we aren't good at crossing some of those boundaries when we take on a project.
>
> Regional Investigator

> I'm not sure the CTN has that [adoption] really as its…primary mission. I think it did initially in the conceptualization of the treatment model, but I think it's moved more and more towards being a sort of a clinical trials machine, multisite clinical trials machine. That hopefully will provide great results that inform what Addiction Technology Transfer Centers, or other people do, but is not the primary deliverer of those…it was only within a couple of years before that big piece [dissemination] of it took kind of a back seat to the running the machine of multisite clinical trials
>
> Protocol Design Team Member

Adoption of Evidence-Based Practice by Treatment Staff

Respondents spoke about the adoption of evidence-based practices in drug abuse treatment. These participants described their perspectives on opportunities for staff practice change within the context of a randomized clinical trial, staff motivation to use a “new” intervention, and the challenges of innovation in general:

> The thing that motivates counselors to adopt a model is, it makes sense, it fits with their experience, and they find it helpful. It may be different from what they've been doing, but it sort of resonates, it kind of strikes a chord, it makes sense, they try it and they can experience some success with it, and they can find a way to work it into their practice, into how they operate.
>
> Clinic Director

> This [the CTN] gives an opportunity for people to try things… I think that at a clinician level, if they like it and it fits and it seems to benefit the patients, they're gonna do it. If it doesn't, I don't know…
>
> Protocol Design Team Member

> …[treatment staff] really want to help the clients that they work with; and if they see that something's better than what …their normal practice is, I think they’ll adopt it… I think it’s going to be tough to get them to do something that’s manualized…to expect that people are going to become, you know, little robots, and do everything exactly the way it says in the manual—that’s never going to happen… And I think the best we can really do…is to figure out what elements of the manual appeal to counselors, and then try and get them to do that…it’s like trying to…take a professional athlete and change the way they play the game. If it gets outside their comfort zone, they demand a trade, you know? It doesn’t work.
>
> Clinic Director

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> …there has to always be support from the top. Otherwise, you’re not gonna get anywhere…and then the support has to…be translated into not only talk but also sometimes resources when it’s evaluated that that’s what’s needed. And so the constraints are that when you have the clients and revenue, because of contract cuts and hard times, certain things you can’t move forward as quickly.
>
> Protocol Design Team Member

> Actually, Rogers [diffusion theoretician] says, what you have to ask is, when adoption does happen, why [does it happen?], because that's the exception. Status quo is the norm for the human race…. So you want to understand why change does happen, not try to figure out why it doesn't.
>
> Protocol Design Team Member

Training to support adoption

Respondents described the need for training on evidence-based practices, both for the field at large and for clinic staff who remain at a clinical trial site after a study is completed and “life returns to normal.” They discuss the critical role of training in adoption and challenges in designing economical and effective training with lasting results:

> We're trying to get clinicians to learn complicated nuanced psychosocial interventions, and yet, we do these one-shot exposures, and say [to clinicians]: “Peace be with you. Go forth and prosper.” And it doesn't work that way. Nothing that's more than a very simple task can really be learned and sustained. So the question is, how do you go about that, what are the best models for doing that?
>
> Protocol Design Team Member

> In a trial…you're naturally thinking about protocol adherence. And that's the prime directive, from the PI's perspective. But that may not be the only thing you need to do if you want this to continue after the trial is over. When you're required to adhere to something, and the requirement is lifted, there's a natural tendency to stop doing it…really, it's thinking differently about what we're doing and how we're doing business…maybe you have to do this separately. Maybe the requirements of adherence…are sufficiently strong that dissemination research needs to be outside the context of clinical trials…
>
> Protocol Design Team Member

Barriers to Adoption in the Context of the CTN

Respondents described a number of barriers to adoption in the characteristics, structure, and operation of the CTN. These included barriers such as the necessary conditions for non-contamination of the clinical trial, the volume of attendant paperwork for documentation, and a “lab effect” wherein sequential clinical trials conducted in a site reduced possibilities for adoption:

> …it's important when you're doing a clinical trial, to build a firewall between the clinical condition and treatment-as-usual. And I think that the same firewall that protects the research impedes the transfer of information…
>
> Regional Investigator

> …[with] the rigors of clinical trials, there's a lot of paper work…you have to do a lot of things that aren't part of normal practice…We don't know whether those are disincentives to the person continuing to use this, or not. But they're certainly not part of the way it would be practiced…in ordinary agencies. So, if you were to design a

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> system to foster the…diffusion and adoption of innovations, you wouldn't design the clinical trials network…there are enough things about clinical trials that make me wonder whether they aren't actually barriers to adoption
>
> Protocol Design Team Member
>
> …I almost am not sure that…they [the CTN clinic sites] are gonna be the ones where you will actually see sustained changes in practice… at least in the short term. …at the same time that [a protocol] is winding down, we're starting out [another]… protocol…[Then] one of our MET sites is gonna next do [another] protocol. One of our buprenorphine sites is also gonna be moving into [another] protocol. One of the other sites that was doing Motivational Incentives is actually gonna be doing [another] kind of study. And so in some ways you [are] washing it away by having them then do the next protocol. So…I'm not sure that the CTN itself is going to be the primary engine for dissemination.
>
> Protocol Design Team Member
>
> We want to be able to actually implement the [intervention]…but, then again, we have to wait now to finish this other one [protocol]…so we can implement it…
>
> Clinic Supervisor

Future of the CTN in Relation to Adoption

Participants expressed a wide range of opinion on the place of adoption in the context of the CTN. They described the challenges associated with promoting adoption as part of the CTN mission, future training issues, and dissemination. These participants articulated their doubts, and opposition, to inclusion of adoption as part of the CTN mission:

> …the focus is on conducting the protocols that hopefully inform a dissemination process, rather than our being the primary deliverers of that. So I mean, there's dissemination that's sort of involved in our doing this in partnership with the community treatment programs, but then it's more that beyond thing…once the protocols are over, that dissemination piece, I'm not sure the CTN has that as its… primary mission…
>
> Protocol Design Team Member
>
> I don't think it's the best format [for adoption]…
>
> I think we have to be careful that we don't conflict research discovery with application. I mean, we have to do research on things that can be applied, but it's really kind of a different setting. But it definitely gets the agency [CTN clinic] thinking about wanting to stay current with research…
>
> Regional Investigator

Another respondent suggested the need for further research on line staff adoption of the tested intervention after completion of a clinical trial, and recommended variations in elements of the clinical trial itself to evaluate post-trial use of the tool by clinicians:

> We can find out [in the CTN] whether adoption happens naturally, after the clinical trial is over and you got people in the agency that have learned how to do it and have been doing it. Or whether it just disappears the second the trial is over, which is the normal outcome. Or, if you can do another little thing or two that will improve adoption afterwards, or whether adoption is really an entirely different enterprise from clinical trials…and that if what you want is to get this into practice in the agency on an ongoing basis, you've got to do something different from clinical trials.

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Protocol Design Team Member

Finally, dissemination was described in terms of it being the ultimate goal of the CTN.

Respondents' perspectives included their views on what is required for dissemination, engaging with the "real-world" practice field, and the yet unknown possibilities for the CTN, for individual clinician, and for the field of addiction treatment at large:

> But dissemination is…the ultimate challenge of the CTN…it IS the ultimate challenge… Because this whole thing is not going to be worth anything if people don't learn how to do treatment better…you need to motivate people, you need to incentivize people, you need to train the heck out of people, you need to understand where they're coming from…it's a real challenge, and it's going to require an awful lot of thought, and an awful lot of flexibility… if we don't eventually get what we've learned out to the field, because it's better, then this whole thing is a waste of money. You know, all it is a full employment act for researchers… The purpose is to improve treatment outcomes. And gain adherence to these protocols that work, the science-based interventions, throughout the field. …we're not evidence based. We don't know that what we're doing works.

Clinic Director

> …the CTN is…a very young structure…It's going to grow and mature over time… we should be patient…we've just made the initial down payment, and the benefits of those investments will be accruing in the near future…my sense is that the CTN is working, the CTN has a fairly large number of clinical trials in the field… I think the clinical trial is just learning what it can do and how it can do it. And its attention is just now shifting towards more of a dissemination issue, and we'll learn from that and five years from now it'll be a different story. A more complete story.

Regional Investigator

> …the fantasy that I would have would be at the end of the day…at the point when the staff person leaves that agency and goes on to the next job…they go on knowing that they [can] pull out of their bag of tricks the kind of treatment approach that makes sense…that in the end would be where practitioners who have been involved in the CTN…they've been a therapist on a couple of protocol and that's now part of …what they're able to do with patients…

Protocol Design Team Member

Discussion

Our interest, in this paper, is to describe perspectives on the place of adoption within the CTN, using qualitative interview data of CTN "insiders" in order to reflect the range of opinion on the issue of adoption overall, the CTN mission, and the place of adoption within the CTN "research machine." Dissemination of evidence-based drug abuse treatment interventions are cited by respondents as a clear goal of the CTN, yet agreement among these key respondents on the role and responsibility of the CTN for adoption remains unsettled. Our study findings describe insider perspectives during the period of 2003–2004. In addition to probable evolution of opinion and practice on the matter of adoption since then, the findings do not represent the totality of opinion on the place of adoption in the CTN. They do, however, trigger questions for consideration at this point in the CTN's eight-year development on the role of the CTN for transfer of research results.

Adoption issues for the drug abuse treatment field at large were also highlighted by our respondents, including how the CTN presents opportunities for practice change, staff

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motivation to use new interventions, and the challenges of innovation. Practice change and innovation were described as possibilities that may occur without a specific adoption protocol or support and as practice change that is dependent upon individual staff dispositions: “if they like it and it fits and it seems to benefit the patients, they’re gonna do it” as one respondent noted. Staff may use new technology under CTN conditions, but will they adopt new treatment practices in treatment programs and systems where accommodation of new tools may be challenged by less than ideal conditions for adoption?

Study participants noted the problems associated with “one-shot exposure” types of staff training in randomized clinical trials and suggested that adoption requires not only individual staff acumen in carrying out the intervention, but readiness within the treatment setting for that level of change. Rogers’ diffusion theory (2003) would suggest that the culture of CTN clinic environments as laboratories for research presents conditions already supportive of adoption. The CTN has a unique hybrid status in terms of its “laboratory” conditions in which treatment staff encounter, apply, and participate in testing the “new” intervention. The intervention or treatment tool under examination has demonstrated efficacy in prior research, so that staff have reason to be optimistic about the ‘promising practice.’ We suggest construction of the CTP research environment to support staff in maintaining use of the intervention after the clinical trial ends, and that such planning for adoption could support transfer of research findings (Guydish, Tajima, Turcotte Manser & Jessup, 2007).

Barriers to adoption included the firewall between the clinical intervention and treatment-as-usual staff, the problem of lab effects, and the inherent burden of paperwork required by a randomized clinical trial. The “firewall” prevented contamination between arms of the clinical trial, and in so doing prevented “treatment-as-usual” (TAU) staff from exposure to the intervention. Recent findings of DuCharme et el. (2007) suggest that exposure is a key factor for later adoption of the intervention by clinicians. Although limited communication between TAU treatment counselors and intervention treatment counselors during a clinical trail is essential, the required “firewall” prevents close-up application and exposure to innovations in TAU clinical staff.

Lab effects refers to the CTN CTP practice of conducting serial study protocols in the same setting, so that clinics operate like research laboratories. In some cases, there is only a matter of months between closing down a completed study and gearing up for and moving to the next research protocol. The obligation of CTPs in the CTN to conduct serial research studies in their setting, not a usual condition of community based clinics, may interfere with post-trial adoption of tested interventions. The clinical settings engaged in serial research studies may be altered by effects of the trial on the staff or setting, with subsequent protocols conducted in evermore different and unusually hybridized conditions. External validity and generalizability of the findings may be affected under these conditions. Knudsen and colleagues (2007) suggest that the CTN CTP settings may not be representative of the larger U.S. treatment system. In addition to their finding of significant differences in counselor characteristics between the two types of settings, we suggest that this “lab effect” may also constitute an important difference between CTN-affiliated treatment settings and other treatment service sites.

Study participants cited the burdensome paperwork required for a clinical trial as a possible deterrent to adoption. In a real-world process of adoption in a CTN clinic setting, requirements for documentation would presumably be reduced. However, as one respondent indicated, staff may be discouraged from using the intervention simply because of their previous experience with the large amount of documentation demanded by the clinical trial, and their perception that use of the intervention requires that continued burden of documentation beyond experimental conditions.

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Commenting on the future of the CTN and the place of adoption, one respondent stated that the CTN is still evolving and maturing, noting "its attention is just now shifting towards more of a dissemination issue." The CTN structure, because it includes a large number of collaborating clinics, presents a unique opportunity to support adoption, particularly for those interventions tested in the CTN. The CTN may also provide a rich setting in which to examine general adoption practices of drug abuse treatment staff, and the complex processes of adoption. As sites for exploration of issues related to adoption, CTP partners are unparalleled. These clinics simultaneously serve the research and practice missions often amidst competing interests and conflicting agendas. Like other community based drug abuse treatment programs, CTN clinics also experience staff turnover, financial challenges, have varied staff and multiple client populations, and differing organizational cultures. These contextual staff and setting characteristics present a range of opportunities to support adoption of effective interventions, and to conduct further naturalistic observational studies on the dynamics of adoption within CTN clinics. Given the potential for improved health and social outcomes for a large number of enrolled treatment clients, the CTN itself is a logical place to also support adoption of effective interventions. Adoption of effective interventions within the CTN could significantly affect a large number of patients, as well as CTN clinicians and providers, yet it will require philosophical discussion within the CTN regarding its mission of research discovery and application.

Research is needed to examine what happens in the processes of adopting (and not adopting) the test intervention, locating those studies inside the NIDA CTN clinical trials themselves. Areas of further research include: 1) why and how programs decide to use/not use an intervention with demonstrated effectiveness in their own settings; 2) dynamics of adherence and fidelity once a trial is concluded; 3) attributes of the intervention as determinants of adoption/non-adoption; 4) characteristics, attitudes, and beliefs of adopters and non-adopters; 5) the influence of changing local, state and federal policy shifts and economies that may impede or promote adoption and 6) continuing examinations of the substance abuse treatment workforce and workplace conditions that facilitate and hinder innovation.

The range of views on adoption within the CTN that surfaced in this study may be one conversation inside the on-going universe of discussion on philosophies of research and the historical methodological strains existing between traditional methods of scientific empiricism and other investigations examining real-world experience which tend to examine processes, structures and meaning (Denzin and Lincoln, 2000). On the one hand, a respondent recommended caution that the CTN not "…conflict research discovery with application." On the other, another respondent suggests that knowing more about the processes of adoption---"whether adoption happens naturally, after the clinical trial is over…or whether it just disappears the second the trial is over"---could be a way to inform adoption efforts. Documentation of the research to practice gap is extensive, yet the dearth of research on specific processes of innovation in drug abuse treatment programs suggests a need to look beyond conventional perceptions of how and why knowledge diffusion stalls and to scrutinize systems, contexts, staff attributes, and the interactions of these factors. In this respect, we support recommendations of Glasgow et al. (2003) who call for examining the "complexity of the world." As these process dynamics are described, the field of drug abuse treatment will have greater expertise and information about rolling out the tools that the CTN tests.

Acknowledgments

This work was supported by NIDA (R01 DA-14470), by the California-Arizona Node of the Clinical Trials Network (U10 DA-105815), and by the NIDA San Francisco Treatment Research Center (P50 DA-09253).

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Table 1

Multi-Levels of Assessment (MAP)

Level	Number (n=29)
Protocol Design Team Member*	5
Regional Investigator	7
Clinic or Program Director	5
Clinical Supervisor	2
Clinician	10

*This level includes three levels: Intervention Designer (1), Clinical Trial Funder (1), and Protocol Team Leaders (3).