

# Translating Science to Practice: Lessons Learned Implementing Evidence-Based Treatments in US Substance Use Disorder Treatment Programs

Howard Padwa 1 . Charles D. Kaplan 2

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Abstract Despite significant effort devoted to developing and testing treatments for substance use disorders (SUD), most individuals who receive treatment in the United States (USA) do not receive evidence-based care. In this article, we summarize the emerging body of descriptive research that focuses on the question of why SUD treatment programs in the USA do not use evidence-based treatments (EBT) more and highlight initiatives that have shown promise as ways to facilitate their use. Using the Consolidated Framework for Implementation Research (CFIR) as a guide, we provide an overview of how various factors promote or inhibit the use of evidence-based treatments in SUD treatment settings in the USA. We then discuss how promising approaches to facilitate the use of EBT build upon many CFIR concepts and constructs. The article concludes with a discussion of the implications of the USA experience with EBT implementation for non-Western nations as they develop SUD services, highlighting three main lessons learned: (1) historical and cultural factors impact EBT implementation; (2) studies that test both clinical effectiveness and implementation outcomes can enhance implementation; and (3) multilevel implementation approaches may have greater impact than strategies that address just one level of change (e.g., individuals, organizations, systems).

**Keywords** Substance use disorders · Implementation science · Health services · Evidence-based practices · Consolidated Framework for Implementation Research

Howard Padwa hpadwa@ucla.edu



<sup>&</sup>lt;sup>1</sup> Integrated Substance Abuse Programs, University of California Los Angeles, 11075 Santa Monica Boulevard, Suite 200, Los Angeles, CA 90025, USA

School of Social Work, University of Southern California, 669 West 34th Street, Los Angeles, CA 90089, USA

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#### Introduction

As the other articles in this special issue illustrate, reducing health and social harms associated with substance use disorders (SUD) remains a significant challenge in Western countries. Policy responses to SUD have historically been more punitive than curative, and only in the past few decades have Western nations developed systems of care that comprehensively treat SUD as a health problem (National Center on Addiction and Substance Abuse 2012; White 1998). As treatment and rehabilitation have become central to Western SUD policies, medical and psychological researchers have developed a host of effective interventions to prevent, minimize, and treat the harms associated with substance use (Prendergast et al. 2002). These include behavioral interventions such as contingency management (use of incentives to encourage abstinence), cognitive behavioral therapy (restructuring patients' thoughts and beliefs about substance use), and motivational interviewing (a method that stimulates patients' motivations to change their behaviors) (Carroll and Onken 2005; Dutra et al. 2008). Pharmaceutical advances have also led to the development of highly effective SUD medications, such as methadone, buprenorphine, and naltrexone (Ling et al. 2005; O'Malley et al. 2007).

Notwithstanding significant effort developing and testing these interventions, in the USA, evidence-supported behavioral and pharmacological treatment for SUD is more the exception than the rule. Surveys and published estimates indicate that overall, less than half of SUD treatment programs deliver evidence-based treatment (EBT) (Molfenter 2014; Saunders and Kim 2013). Only 26% report using contingency management, and on occasions when they do implement it, it is with significant variability and questionable adherence to recommended procedures (Bride et al. 2011). Less than 45% of treatment programs report using any SUD pharmacotherapies (Roman et al. 2011), and in many parts of the USA, evidence-based SUD medications remain completely unavailable (Stein et al. 2015). Though it has been widely anticipated that health-care reform will help address many of these issues by changing how insurance plans cover SUD treatment (Humphreys and Frank 2014), the impact of major health policy changes on EBT delivery remains unknown. Thus, despite significant advances in the science of SUD treatment, available evidence suggests that translating scientific knowledge into clinical practice remains a major challenge.

As researchers and policymakers in the USA have sought to close the gap between SUD treatment knowledge and practice, a growing body of knowledge concerning the barriers and facilitators of evidence-based treatment has emerged. In this article, we summarize this research, highlighting lessons learned that policymakers and practitioners elsewhere may wish to consider as they develop their own SUD treatment systems and programs. We then discuss approaches and initiatives that have shown promise in USA treatment settings to promote the use of EBT, highlighting how these efforts build on many concepts and constructs used in descriptive studies of EBT implementation. We conclude with consideration of ways that emerging treatment systems in non-Western countries can circumvent barriers that have hindered EBT implementation in the USA and how approaches that show promise to facilitate EBT implementation can be replicated by other nations. In particular, we highlight three main lessons learned from the USA experience: (1) historical and cultural factors impact EBT implementation; (2) studies that test both clinical effectiveness and implementation outcomes can enhance implementation; and (3) multilevel implementation approaches may have greater impact than implementation strategies that address just one level of change (e.g., individuals, organizations, systems).



# Implementation Research in USA SUD Treatment Programs

Failure to deliver EBT is not unique to SUD treatment in the USA, as across healthcare systems, it takes between 17 and 25 years for EBT to be incorporated into routine practice, and less than half of EBTs ever reach widespread use (Bauer et al. 2015; Damscrhoder and Hagedorn 2011; Saunders and Kim 2013). Consequently, many—if not most—US healthcare patients receive suboptimal treatment (Bauer et al. 2015; Proctor et al. 2009). In the early 2000s, a new field of inquiry—implementation science—emerged to address questions of how to close the gap between health-care research and practice (Bauer et al. 2015; Damschroder et al. 2009; Proctor et al. 2009). Whereas most Western health-care research focuses on identifying which interventions work best, for which populations, and in which settings, the emphasis of implementation science is the development of knowledge concerning the adoption of effective treatments and their consistent and routine implementation in real-world practice (Proctor 2009; Damschroder and Hagedorn, 2011). Compared with efficacy studies that test functional and symptom-focused outcomes, and compared with effectiveness studies, which concern the generalizability of interventions in real-world settings, implementation science focuses on the actual use of interventions already proven to be clinically effective (Curran et al. 2012) (see Fig. 1).

In 2009, Damschroder and colleagues synthesized theories that emerged from early implementation science research to create the Consolidated Framework for Implementation Research (CFIR), an overarching framework of concepts and terms central to the study of EBT implementation (Damschroder et al. 2009). The CFIR delineates 37 factors across five major domains that describe issues pertinent to EBT implementation:

- (1) Intervention characteristics
- (2) Outer setting
- (3) Inner setting
- (4) Individual characteristics
- (5) Implementation processes.

Table 1 provides a full description of CFIR domains and constructs.

A growing body of research has identified factors that promote or inhibit EBT implementation, and initiatives designed to increase their uptake and sustainment have been well documented in recent years. The USA experience can be instructive for policymakers, administrators, researchers, and providers in non-Western nations both by highlighting potential pitfalls that can inhibit the delivery of EBT in SUD treatment settings and identifying ways that EBT can be effectively promoted and implemented. In recent studies, researchers have identified how factors described in each CFIR domain impact EBT delivery:

**Fig. 1** Research pipeline (adapted from Curran et al. 2012)





Table 1 Consolidated framework for implementation research (CFIR) domains and constructs (Damschroder et al. 2009)

Domain	Construct	Construct description
Intervention characteristics	Intervention source Evidence strength and quality	Who developed an intervention and why Stakeholders' perceptions of quality and validity of evidence supporting the belief that the intervention will have desired outcomes
	Relative advantage	Stakeholders' perception of the advantage of implementing the intervention instead of an alternative solution
	Adaptability	Degree to which an intervention can be adapted, tailored, refined, or reinvented to meet local needs
	Trialability	Ability to test the intervention on a small scale in the organization before full implementation
	Complexity	Perceived difficulty of implementation (scope, disruptiveness, intricacy, number of steps required to implement)
	Design quality	Perception of how well the intervention is presented
	Cost	Costs of the intervention and its implementation (investment, supply, opportunity costs)
Outer setting	Patient needs and resources	Extent to which patient needs drive organizational policy and change
	Cosmopolitanism	Degree to which an organization is networked with other organizations
	Peer pressure	Degree to which organizations feel mimetic or competitive pressure to implement an intervention because other competing organizations are implementing it
	External policies and incentives	Policies, regulations, mandates, recommendations, or guidelines
Inner setting	Structural characteristics Networks and communications	Social structure, maturity, and size of an organization Nature and quality of social networks within an organization
	Culture Tension for change	Norms, values, and basic assumptions of the organization Degree to which stakeholders within the organization perceive need for change
	Compatibility	Degree of tangible fit between meaning and values of intervention and those of the organization
	Relative priority Organizational incentives and rewards	Shared perception of the importance of implementation Extrinsic incentives (performance reviews, promotions, salary increases) associated with implementation
	Goals and feedback	Degree to which implementation goals are communicated and staff are made aware of progress toward implementation
	Learning climate	Climate where leaders encourage team members to learn and make change
	Leadership engagement	Commitment, involvement, and accountability of organizational leaders involved with implementation
	Available resources	Level of resources dedicated to facilitating implementation
	Access to information	Ease of access to information and knowledge about the
Characteristics	and knowledge Knowledge and beliefs	intervention and how to incorporate it into regular practice Individuals' attitudes and beliefs about the intervention
of individuals	0	individuals and benefit about the intervention
or marriage.	Self-efficacy	Individuals' beliefs in their own capacity to successfully implement the intervention
	Individual stage of change Individual identification	Individual readiness to implement the intervention How individuals perceive their relationship with and
D	with the organization	commitment to the organization
Process	Planning Engaging	Degree to which implementation is planned in advance Attracting and involving appropriate individuals in facilitating implementation
	Opinion leaders	пірієніснацоп



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Table 1	(continued)

Domain	Construct	Construct description
		Attitudes and behaviors of individuals in an organization who have formal or informal influence on others regarding the implementation of the intervention
	Formal implementation leaders	Formal appointment of staff members to take responsibility for implementation
	Champions	Presence of individuals within the organization who may help overcome indifference or resistance that implementation may provoke among staff
	External change agents	Individuals who are affiliated with an outside entity who formally influence or facilitate intervention implementation
	Executing	Carrying out or accomplishing the implementation according to a plan
	Reflecting and evaluating	Collecting data and providing feedback about progress and quality of implementation to facilitate quality improvement

**Intervention characteristics** Among the intervention characteristics described in the CFIR, evidence strength, quality, complexity, adaptability, and cost have had a significant impact on EBT uptake and implementation. Providers' perceptions of how effective specific interventions are play a major role in increasing or reducing the chances that EBT will be implemented (Bride et al. 2012). If there is conflicting information or unclear evidence about EBTs—even if the preponderance of studies favor their use—implementation may be limited (Roman et al. 2011). Similarly, concerns about EBT potentially having unintended negative consequences (such as diversion of SUD treatment medications for nonmedical use) can create reluctance to deliver them (Duncan et al. 2015). Intervention complexity can also inhibit EBT uptake, particularly for medications; lack of clarity about what services are needed in conjunction with pharmacotherapy discourages providers from using medications (Roman et al. 2011), and providers report medications that require complicated administrative and/or storage procedures (such as extended-release naltrexone) are difficult to deliver consistently (Alanis-Hirsch et al. 2016). Intervention flexibility and latitude for providers to adapt practices to fit within their normal service delivery routines promote implementation, as does ease of learning and use (Amodeo et al. 2013). Concerns that EBT are too costly can inhibit their implementation (Alanis-Hirsch et al. 2016; Bride et al. 2012; Knudsen and Roman 2014), as can lack of evidence that EBT can achieve cost savings for treatment organizations (Roman et al. 2011).

**Outer setting** Among the outer setting domains described in the CFIR, patient needs and resources, cosmopolitanism, and external policies and incentives have impacted EBT implementation. Patient needs and preferences play a critical role in determining whether new treatments will be used, as client attitudes, behaviors, and clinical fit are essential preconditions for successful implementation (Amodeo et al. 2013; Knudsen and Roman 2014; Roman et al. 2011). Program relationships with other agencies can facilitate implementation through interagency collaboration (Amodeo et al. 2013), and accreditation from external agencies increases the likelihood that treatment programs will use both evidence-supported pharmacotherapies (Roman et al. 2011) and behavioral interventions (Hartzler et al. 2012b). External policies and incentives—particularly those related to funding—can also be powerful drivers of EBT implementation. Programs that receive reimbursement from health insurance agencies are more likely than others to use medication-assisted treatments (Roman et al. 2011), whereas the exclusion of newer medications



from insurance formularies inhibits their use (Alanis-Hirsch et al. 2016). In programs that receive public funding, legislation, contracts, rules, and regulations that require or encourage the use of EBT can be used to facilitate their utilization. (Rieckmann et al. 2011).

**Inner setting** The CFIR domain that received the most attention in implementation studies is the inner setting, which is particularly critical in the USA context because the culture of SUD treatment programs has played a large role in influencing the use—or more often the nonuse of EBTs. Historically, most programs delivered care that was rarely informed by research evidence (Rawson et al. 2014), whereas other medical subspecialties are historically linked with scientific research. SUDs were so highly stigmatized that health professionals rarely treated them until the 1970s. Consequently, most treatment in the USA has been traditionally delivered by nonprofessionals who themselves were in recovery rather than formally trained medical providers (Miller et al. 2006; White 1998). As a result, treatment practices in many programs have been guided by folk wisdom and the self-help philosophy of 12-step programs such as Alcoholics Anonymous (which are not empirically supported by research evidence; Ferri et al., 2006). Over time, providers and programs developed strong allegiance to their own personal treatment approaches and began to view interventions delivered by medical or psychiatric professionals with suspicion, even if they were supported by research evidence (Miller et al. 2006; Morgenstern 2000). Though the treatment field has become increasingly integrated into the medical system over the past two decades (Pating et al. 2012; Roy and Miller, 2012), strict adherence to traditional 12-step and self-help approaches continues to inhibit the delivery of evidence-based behavioral (Kirby et al. 2006) and pharmacological (Roman et al. 2011; Knudsen and Roman 2016) interventions in many programs (Finney and Hagedorn, 2011).

Other CFIR inner-setting characteristics that impacted EBT implementation include compatibility, relative priority, learning climate, and leadership engagement. Programs that have a medical orientation—those located in hospitals, that provide medically supervised withdrawal management, that have physicians on staff, and that prescribe medications for other health conditions—are more likely than others to provide medication-assisted treatments (Roman et al. 2011). Organizational readiness to change—defined as the extent to which staff collectively are prepared to implement change—can strongly promote the adoption of new EBTs (Becker et al. 2016; Heneggler et al. 2008; Simpson et al. 2007), as can staff with strong commitment to their treatment organization (Fuller et al. 2007). A strong organizational learning climate—where training, supervision, and support from program directors and clinical supervisors are present—can also facilitate EBT implementation (Amodeo et al. 2013; Guerrero et al. 2014; Guerrero et al. 2016; Hartzler et al. 2012b).

Characteristics of individuals CFIR individual-level factors that have impacted EBT implementation include individual knowledge and beliefs about interventions, provider self-efficacy, and individual provider readiness to change. Staff beliefs that EBTs do not address the spiritual aspects of SUD that are central to recovery in self-help philosophies inhibit their use in some programs (Hartzler et al. 2012b; Kirby et al., 2006; Roman et al. 2011), as does lack of knowledge about EBTs (Alanis-Hirsh et al. 2016). Conversely, staff with more formal training (Forman, et al. 2001; Hartzler et al. 2012a), positive attitudes about EBTs (Henggeler et al., 2008; Smith and Manfredo, 2011), and exposure to their use (Aletraris et al., 2015) are more likely to use them. Having staff amenable to trying new practices also increases the likelihood that a program will implement new EBTs (Amodeo et al. 2013).



**Process** Research on discrete implementation processes identified in the CFIR—planning, engagement, opinion leaders, formal implementation leaders, champions, external change agents, executing implementation, and reflection/evaluation—is limited (Bauer et al., 2015). Studies have suggested that specific implementation activities targeting each domain—including policy and regulation (Rieckmann et al. 2011), training (Garner 2009), training paired with ongoing technical assistance to guide implementation (Becker et al. 2016; Squires et al. 2008), use of web-based tools (Aletraris et al. 2015), and practical adaptation of interventions (Hartzler et al., 2012b)—can help facilitate EBT implementation.

### The Promise of Multilevel Implementation Approaches

Though research on SUD treatment programs describes factors that promote or inhibit the use of EBTs in CFIR domains related to intervention characteristics, outer settings, inner settings, and characteristics of individuals, research on implementation processes in more limited. However, experience indicates that the most promising approaches may be those that simultaneously address issues in several of the other four CFIR domains (intervention characteristics, outer settings, inner settings, characteristics of individuals). Below are some examples of multilevel implementation approaches that address multiple CFIR domains and have been used to facilitate EBT implementation in USA SUD treatment settings over the past 15 years:

- Texas Christian University (TCU) Program Change Model: The TCU Institute of Behavioral Research (Lehman et al. 2011; Simpson and Flynn 2007) developed a program change model that defines procedures for identifying program needs before implementing new practices in SUD treatment settings. Prior to implementation, the TCU model used assessments of staff training, staff experience, organizational culture, organizational functioning, staff professionals' attributes, available resources, and potential implementation costs to create a comprehensive overview of implementation facilitators and barriers in each treatment organization. Insight into these issues before implementing a new practice can inform efforts to plan change and identify areas in which preparatory activities may be necessary to create an environment more conductive to EBT implementation. Based on this information, programs can use a seven-step process to address potential barriers to implementation and prepare for organizational change:
  - (1) Identify strengths and problems
  - (2) Analyze problems by exploring causes, consequences, and solutions
  - (3) Select potential goals
  - (4) Explore potential consequences of change
  - (5) Target and prioritize subgoals
  - (6) Create action plans
  - (7) Monitor progress toward goals

By systematically evaluating factors at the CFIR inner-setting and individual-characteristics levels and facilitating targeted change, the TCU model provides a roadmap to effect evidence-based practice implementation. At the conclusion of planning and preparatory phases, the TCU approach then divides implementation into four steps—exposure to new interventions (via training or workshops), adoption (decision to try a new practice), implementation (period of



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trial use), and practice (incorporating an evidence-based practice into regular use and sustaining it) (Lehman et al. 2011).

- Advancing Recovery Demonstration Project: The Advancing Recovery Demonstration project was an initiative that gave providers and policymakers in 12 states in the USA flexibility to use a mix of system- (outer setting) and organization- (inner setting) level changes to facilitate EBT implementation. System-level changes used in the project included changes to inter-organizational capability (e.g. promoting partnerships between organizations to facilitate delivery of EBT), increasing the number of patients who would receive treatment, changes in funding and incentives, regulatory changes, and shifts in system-wide operations. At the organizational level, interventions included steps to better understand patient experiences of care, creation of measurable organizational aims, leadership support, and communicating that EBT is cost effective. To facilitate these changes, Advancing Recovery provided technical assistance and created partnerships between policymakers and providers who, in each state, had flexibility to choose which EBTs they would promote and which strategies they would implement to increase their use. All 12 groups that participated increased their use of EBT (Molfenter et al. 2013). No study compares that program to other implementation approaches, so it is difficult to ascertain whether the initiative itself was effective in making change or if change occurred due to the "Hawthorne effect," wherein changes occur simply because participants know their behaviors were being observed (McCambridge et al. 2014). Nonetheless, the Advancing Recovery experience highlighted the potential that tailoring and system- and organizationlevel change strategies have to facilitate EBT implementation in SUD treatment programs.
- National Institute on Drug Abuse (NIDA) and Substance Abuse and Mental Health Services Administration (SAMHSA) Blending Initiative: In the USA, two separate federal agencies are responsible for overseeing treatment research and ensuring that research findings are translated into treatment practices; NIDA conducts research focused on developing SUD treatment interventions, whereas SAMHSA is charged with overseeing service delivery (Flynn and Brown 2011). In 1999, NIDA established its National Drug Abuse Treatment Clinical Trials Network (CTN) to: (1) conduct pharmacological and behavioral treatment trials in community-based treatment programs, and (2) transfer findings from these studies to community program providers and patients. The Blending Initiative is a collaboration between the CTN and SAMHSA designed to facilitate the use of research and program-evaluation findings—particularly EBTs—in ordinary clinical practice. The CTN and the Blending Initiative promote EBT implementation by developing interventions and dissemination strategies that address four major CFIR domains—intervention characteristics, outer setting, inner setting, and characteristics of individuals. CTN trials are conducted in multiple treatment programs, and interventions in CTN studies need to be used by real-world treatment providers, not just research staff, when being tested. This ensures that for interventions developed in the CTN, three CFIR domains—intervention characteristics, inner setting, and characteristics of individuals—are favorable to implementation in real-world settings. Once CTN studies are completed, Blending Teams consisting of CTN researchers, program providers, and SAMHSA-contracted education, training, and technical assistance experts collaborate to develop products that support the widespread adoption of specific treatments proven effective in CTN trials. Team members determine what types of materials (e.g., training curricula, educational information, practical guides) are most likely to facilitate the successful transfer of research results to the community, develop these products, and create a strategic plan for distributing them. By developing resources and an infrastructure to facilitate



knowledge about EBTs and how to use them, CTN and Blending Initiative activities also create outer settings that are more conducive to EBT implementation. Using these methods, the Blending Initiative has both generated scientific knowledge and helped facilitate implementation of EBTs such as buprenorphine, contingency management, and motivational interviewing (Condon et al. 2008; Martino et al. 2010).

#### **Lessons Learned**

Lessons learned from SUD EBT implementation studies in the USA, combined with experience gathered over decades of translating research into practice, have yielded three major lessons that could be of use for other nations as they develop their treatment systems: (1) historical and cultural factors impact EBT implementation; (2) studies that test both clinical effectiveness and implementation outcomes can enhance implementation; (3) multilevel implementation approaches may have greater impact that strategies that address just one level of change (e.g., individuals, organizations, systems).

- Historical and Cultural Factors Impact EBT Implementation: EBTs have historically been developed and tested in well-controlled research environments, thus minimizing the impact that historical context or cultural attitudes have on study outcomes. In the USA, this has been highly problematic, as the isolation of SUD treatment from the rest of medicine led to the development of treatment cultures that have been largely suspicious of outside expertise and grounded in self-help and mutual support philosophies rather than empirical science. Implementing interventions and approaches developed and tested within the worlds of psychology, psychiatry, and pharmacology in programs that are reluctant to adopt nonspiritual/non-self-help approaches has proven difficult and required researchers and policymakers to expend significant resources and effort to learn why providers are reluctant to adopt EBT, identify ways to address their concerns, and devise strategies to facilitate implementation. Assessments of organizational readiness—such as those used in the TCU Program Change Model—can help policymakers improve their understanding of historical and cultural factors that could potentially inhibit the adoption of EBT. Increased awareness of the historical and cultural context of existing SUD treatment programs can help providers and policymakers understand the issues that may inhibit EBT implementation so they can proactively take steps to address them.
- (2) Studies that Test Both Clinical Effectiveness and Implementation Outcomes can Enhance Implementation: As the field of implementation science has developed in recent years, researchers have begun calling for more hybrid effectiveness-implementation studies that can either (1) determine the effectiveness of a clinical intervention while generating knowledge about its implementation in real-world settings; (2) determine the effectiveness of a clinical intervention while also determining the potential utility of a specific implementation strategy; or (3) determine the utility of an implementation strategy while also assessing clinical outcomes associated with specific implementation approaches (Curran et al. 2012). Such studies are highly promising in their capacity to simultaneously create knowledge about effectiveness and implementation while also speeding up the process of translating clinically effective treatments into real-world practice. Furthermore, these studies can generate critical information about implementation that can be used to promote the uptake and sustainment of these interventions on a large scale.



Though not explicitly designed as hybrid effectiveness-implementation studies, the NIDA-SAMHSA Blending Initiative projects showed the potential of approaches to research that simultaneously create knowledge about intervention effectiveness while facilitating their implementation in real-world settings. By promoting research that blends treatment effectiveness and implementation, non-Western nations can both improve the practicality of their SUD treatment research efforts and promote efficient transfer of clinical knowledge into practice.

(3) Multilevel Implementation Approaches may have Greater Impact that Implementation Strategies that Address Just One Level of Change (e.g., Individuals, Organizations, Systems). Promising models for facilitating EBT implementation focus on several CFIR domains rather than just one level of change: the TCU Program Change Model systematically facilitates implementation through planning and process improvement at the inner-setting and individual domains; Advancing Recovery simultaneously facilitates changes to outer and inner settings to facilitate implementation; the NIDA-SAMHSA Blending Initiative addresses intervention characteristics, outer settings, inner settings, and characteristics of individuals working in treatment programs. Rather than targeting just one level of change, promising approaches to facilitating implementation are multipronged and multilevel and capable of identifying and addressing potential implementation barriers at the individual, program, and system levels.

#### **Conclusion**

A large body of research describes how intervention characteristics, outer settings, inner settings, and characteristics of individuals may promote or inhibit EBT implementation in SUD treatment programs; however, research on implementation processes is more limited. Experience from initiatives to promote EBT use in the USA highlight several key lessons: (1) that historical and cultural factors may impact implementation, so assessments of readiness for change and proactively taking steps to address historical/cultural barriers to EBT implementation may be helpful; (2) that hybrid studies of effectiveness and implementation can promote the transfer of clinical knowledge into practice; and (3) that multilevel implementation approaches may have greater impact than strategies addressing just one level of change. By taking these lessons into consideration, policymakers in other nations seeking to further develop and optimize their own treatment systems may avoid some of the pitfalls that historically hindered the delivery of evidence-based SUD treatment in the USA.

## References

- Alanis-Hirsch, K., Croff, R., Ford, J. H., Johnson, K., Chalk, M., Schmidt, L., & McCarty, D. (2016). Extended-release naltrexone: A qualitative study of barriers to routine use. *Journal of Substance Abuse Treatment*, 62, 68–73.
- Aletraris, L., Shelton, J. S., & Roman, P. M. (2015). Counselor attitudes toward contingency management for substance use disorder: Effectiveness, acceptability, and endorsement of incentives for treatment attendance and abstinence. *Journal of Substance Abuse Treatment*, 57, 41–48.
- Amodeo, M., Lundgren, L., Fernanda Beltrame, C., Chassler, D., Cohen, A., & D'Ippolito, M. (2013).
  Facilitating factors in implementing four evidence-based practices: Reports from addiction treatment staff.
  Substance Use & Misuse, 48(8), 600–611.



- Bauer, M. S., Damschroder, L., Hagedorn, H., Smith, J., & Kilbourne, A. M. (2015). An introduction to implementation science for the non-specialist. BMC Psychology, 3, 32.
- Becker, S. J., Squires, D. D., Strong, D. R., Barnett, N. P., Monti, P. M., & Petry, N. M. (2016). Training opioid addiction treatment providers to adopt contingency management: A prospective pilot trial of a comprehensive implementation science approach. Substance Abuse, 37(1), 134–140.
- Bride, B. E., Abraham, A. J., & Roman, P. M. (2011). Organizational factors associated with the use of contingency management in publicly funded substance abuse treatment centers. *Journal of Substance Abuse Treatment*, 40(1), 87–94.
- Bride, B. E., Kintzle, S., Abraham, A. J., & Roman, P. M. (2012). Counselor attitudes toward and use of evidence-based practices in private substance use disorder treatment centers: A comparison of social workers and non-social workers. *Health & Social Work*, 37(3), 135–145.
- Carroll, K., & Onken, L. S. (2005). Behavioral therapies for drug abuse. American Journal of Psychiatry, 162(8), 1452–1460
- Condon, T. P., Miner, L. L., Balmer, C. W., & Pintello, D. (2008). Blending addiction research and practice: Strategies for technology transfer. *Journal of Substance Abuse Treamtent*, 35, 156–160.
- Curran, G. M., Bauer, M., Mittman, B., Pyne, J. M., & Stetler, C. (2012). Effectiveness-implementation hybrid designs: Combining elements of clinical effectiveness and implementation research to enhance public health impact. *Medical Care*, 50(3), 217–226.
- Damschroder, L. J., Aron, D. C., Keith, R. E., Kirsh, S. R., Alexander, J. A., & Lowery, J. C. (2009). Fostering implementation of health services research findings into practice: A consolidated framework for advancing implementation science. *Implementation Science*, 4, 50.
- Damschroder, L. J., & Hagedorn, H. J. (2011). A guiding framework and approach for implementation research in substance use disorders treatment. Psychology of Addictive Behaviors, 225(2), 194–205.
- Duncan, L. G., Mendoza, S., & Hansen, H. (2015). Buprenorphine maintenance for opioid dependence in public sector healthcare: Benefits and barriers. *Journal of Addiction Medicine and Therapeutic Science*, 1(2), 31–36.
- Dutra, L., Stathopoulou, G., Basden, S. L., Leyro, T. M., Powers, M. B., & Otto, M. W. (2008). A meta-analytic review of psychosocial interventions for substance use disorders. *The American Journal of Psychiatry*, 165(2), 179–187.
- Ferri, M., Amato L. & Davoli, M. (2006). Alcoholics Anonymous and other 12-step programmes for alcohol dependence. The Cochrane Library.
- Finney, J. W., & Hagedorn, H. J. (2011). Introduction to a special section on implementing evidence-based interventions for substance use disorders. *Psychology of Addictive Behaviors*, 25(2), 191–193.
- Flynn, P., Brown, M., & B.S. (2011). Implementation research: Issues and prospects. Addictive Behaviors, 36, 566–569.Forman, R. F., Bovasso, G., & Woody, G. (2001). Staff beliefs about addiction treatment. Journal of Substance Abuse Treatment, 21(1), 1–9.
- Fuller, B. E., Rieckmann, T., Nunes, E. V., Miller, M., Arfken, C., Edmunson, E., et al. (2007). Organizational readiness for change and opinions toward treatment innovations. *Journal of Substance Abuse Treatment*, 33, 183–192.
- Garner, B. R. (2009). Research on the diffusion of evidence-based treatments within substance abuse treatment: A systematic review. *Journal of Substance Abuse Treatment*, 36(4), 376–399.
- Guerrero, E. G., He, A., Kim, A., & Aarons, G. A. (2014). Organizational implementation of evidence-based substance abuse treatment in racial and ethnic minority communities. Administration and Policy in Mental Health, 41, 737–749.
- Guerrero, E. G., Padwa, H., Fenwick, K., Harris, L. M., & Aarons, G. A. (2016). Identifying and ranking implicit leadership strategies to promote evidence-based practice implementation in addiction health services. *Implementation Science*, 11, 69.
- Hartzler, B., Donovan, D. M., Tillotson, C. J., Mongoue-Tchokote, S., Doyle, S. R., & McCarty, D. (2012a). A multilevel approach to predicting community addiction treatment attitudes about contingency management. *Journal of Substance Abuse Treatment*, 42, 213–221.
- Hartzler, B., Lash, S. J., & Roll, J. M. (2012b). Contingency management in substance abuse treatment: A structured review of the evidence for its transportability. *Drug and Alcohol Dependence*, 122, 1–10.
- Henggeler, S. W., Chapman, J. E., Rowland, M. D., Halliday-Boykins, C. A., Randall, J., Shackelford, J., & Schoenwald, S. K. (2008). State-wide adoption and initial implementation of contingency management for substance-abusing adolescents. *Journal of Consulting and Clinical Psychology*, 76, 556–567.
- Humphreys, K., & Frank, R. G. (2014). The affordable care act will revolutionize care for substance use disorders in the United States. Addiction, 109, 1057–1058.
- Kirby, K. C., Benishek, L. A., Dugosh, K. L., & Kerwin, M. E. (2006). Substance abuse treatment providers' beliefs and objections regarding contingency management: Implications for dissemination. *Drug and Alcohol Dependence*, 85(1), 19–27.



Knudsen, H. K., & Roman, P. M. (2014). Dissemination, adoption, and implementation of acamprosate for treating alcohol use disorders. *Journal of Studies on Alcohol and Drugs*, 75, 467–475.

- Knudsen, H. K., & Roman, P. M. (2016). The diffusion of acamprosate for the treatment of alcohol use disorder: Results from a national longitudinal study. *Journal of Substance Abuse Treatment*, 62, 62–67.
- Lehman, W. E. K., Simpson, D. D., Knight, D. K., & Flynn, P. M. (2011). Integration of treatment innovation planning and implementation: Strategic process models and organizational challenges. *Psychology of Addictive Behaviors*, 25(2), 252–261.
- Ling, W., Amass, L., Shoptaw, S., Annon, J. J., Hillhouse, M., Babcock, D., & Ziedonis, D. (2005). A multicenter randomized trial of buprenorphine–naloxone versus clonidine for opioid, detoxification: Findings from the National Institute on Drug Abuse clinical trials network. Addiction, 100(8), 1090–1100.
- Martino, S., Brigham, G. S., Higgins, C., et al. (2010). Partnerships and pathways of dissemination: The NIDA-SAMHSA blending initiative in the clinical trials network. *Journal of Substance Abuse Treatment.*, 38(S1), S31–S43.
- McCambridge, J., Witton, J., & Elbourne, D. R. (2014). Systematic review of the Hawthorne effect: New concepts are needed to study research participation effects. *Journal of Clinical Epidemiology*, 67(3), 267–277.
- Miller, W. R., Sorenson, J. L., Selzer, J. A., & Bingham, G. S. (2006). Disseminating evidence-based practices in substance abuse treatment: A review with suggestions. *Journal of Substance Abuse Treatment*, 31(1), 25–39.
- Molfenter, T. (2014). Addiction treatment centers' progress in preparing for health care reform. Journal of Substance Abuse Treatment, 46(2), 158–164.
- Molfenter, T., McCarty, D., Capoccia, V., & Gustafson, D. (2013). Development of a multilevel framework to increase use of targeted evidence-based practices in addiction treatment clinics. *Public Health Frontier*, 2(1), 11.
- Morgenstern, J. (2000). Effective technology transfer in alcoholism treatment. Substance Use & Misuse, 35, 1659–1678.
- National Center on Addiction and Substance Abuse. (2012). Addiction medicine: Closing the gap between science and practice. New York: The Author.
- O'Malley, S. S., Garbutt, J. C., Gastfriend, D. R., Dong, Q., & Kranzler, H. R. (2007). Efficacy of extended-release naltrexone in alcohol-dependent patients who are abstinent before treatment. *Journal of Clinical Psychopharmacology*, 27(5), 507–512.
- Pating, D. R., Miller, M. M., Goplerud, E., Martin, J., & Ziedonis, D. M. (2012). New systems of care for substance use disorders: Treatment, finance, and technology under health care reform. *Psychiatric Clinics of North America*, 35(2), 327–356.
- Prendergast, M. L., Podus, D., Chang, E., & Urada, D. (2002). The effectiveness of drug abuse treatment: A meta-analysis of comparison group studies. *Drug and Alcohol Dependence*, 67(1), 53–72.
- Proctor, E. K., Landsverk, J., Aarons, G., Chambers, D., Glisson, C., & Mittman, B. (2009). Implementation research in mental health services: An emerging science with conceptual, methodological, and training challenges. Administration and Policy in Mental Health, 36, 24–34.
- Rawson, R. A., Rieckmann, T., & Gust, S. W. (2014). Addiction science: A rationale and tools for a public health response to drug use. *Public Health Reviews*, 35(2).
- Rieckmann, T. R., Kovas, A. E., Cassidy, E. F., & McCarty, D. (2011). Employing policy and purchasing levers to increase the use of evidence-based practices in community-based substance abuse treatment settings: Reports from single state authorities. Evaluation and Program Planning, 34, 366–374.
- Roman, P. M., Abraham, A. J., & Knudsen, H. K. (2011). Using medication-assisted treatment for substance use disorders: Evidence of barriers and facilitators of implementation. Addictive Behaviors, 36(6), 584–589.
- Roy, A. K., & Miller, M. M. (2012). The medicalization of addiction treatment professionals. *Journal of Psychoactive Drugs*, 44(2), 107–118.
- Saunders, E. C., & Kim, E. (2013). Substance abuse treatment implementation research. *Journal of Substance Abuse Treatment*, 44(1), 1–3.
- Simpson, D. D., & Flynn, P. M. (2007). Moving innovations into treatment: A stage-based approach to program change. *Journal of Substance Abuse Treatment*, 33(2), 111–120.
- Simpson, D. D., Joe, G. W., & Rowan-Szal, G. A. (2007). Linking the elements of change: Program and client responses to innovation. *Journal of Substance Abuse Treatment*, 33, 201–209.
- Smith, B. D., & Manfredo, I. T. (2011). Frontline counselors in organizational contexts: a study of treatment practices in community settings. *Journal of Substance Abuse Treatment*, 41(2), 124–136.
- Squires, D. D., Gumbley, S. J., & Storti, S. A. (2008). Training substance abuse treatment organizations to adopt evidence-based practices: The addiction technology transfer Center of new England Science to service laboratory. *Journal of Substance Abuse Treatment*, 34, 293–301.
- Stein, B. D., Gordon, A. J., Dick, A. W., Burns, R. M., Pacula, R. L., Farmer, C. M., et al. (2015). Supply of buprenorphine waivered physicians: The influence of state policies. *Journal of Substance Abuse Treatment*, 48, 104–111.
- White, W. L. (1998). Slaying the dragon: The history of addiction treatment and recovery in America. Bloomington, IL: Lighthouse Training Institute.

