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Evidence-Based Practices in Addiction Treatment: Review and Recommendations for Public Policy

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Abstract

The movement in recent years towards evidence-based practice (EBP) in health care systems and policy has permeated the substance abuse treatment system, leading to a growing number of federal and statewide initiatives to mandate EBP implementation. Nevertheless, due to a lack of consensus in the addiction field regarding procedures or criteria to identify EBPs, the optimal processes for disseminating empirically based interventions into real-world clinical settings have not been identified. Although working lists of interventions considered to be evidence-based have been developed by a number of constituencies advocating for EBP dissemination in addiction treatment settings, the use of EBP lists to form policy-driven mandates has been controversial. This article examines the concept of EBP, critically reviews criteria used to evaluate the evidence basis of interventions, and highlights the manner in which such criteria have been applied in the addictions field. Controversies regarding EBP implementation policies and practices in addiction treatment are described, and suggestions are made to shift the focus of dissemination efforts from manualized psychosocial interventions to specific skill sets that are broadly applicable and easily learned by clinicians. Organizational and workforce barriers to EBP implementation are delineated, with corresponding recommendations to facilitate successful dissemination of evidence-based skills.

Keywords

Evidence-based practice; Technology transfer; Addiction; Treatment; Implementation; Dissemination

The importance of translating scientific advances in disease-specific interventions into clinical practice has been emphasized throughout the health care system, largely stemming from the consistent observation of a wide gap between research and practice [1]. As a move towards “evidence-based practice” has permeated health care systems and policy, several working groups in the addiction treatment field both within and outside of the United States have considered ways to align with this initiative. In the U.S., these efforts have been channeled through various legislative mandates and programs requiring implementation of evidence-based practices. Concurrently, national-level programs have been initiated outside of the U.S. to implement extensive rollouts of evidence-based treatments (e.g., the Improving Access to Psychological Therapies program in the United Kingdom) [2]. Likewise, the largest

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international training initiative in the addictions, developed by United Nations Office on Drugs and Crime, involved dissemination of addiction treatment practices to the Treatnet, a network of 20 drug dependence treatment resources around the world. The inclusion of evidence-based addiction treatment practices with strong empirical foundation was a major emphasis of the training curriculum for Treatnet, which was used successfully both in regions of the world with highly developed and relatively less developed addiction treatment systems [3].

The rationale for the recent movement emphasizing dissemination and implementation of evidence-based practices is straightforward: if clinical decision-making and practice are informed by experimental studies that have established the effectiveness of particular interventions for specified clinical populations, this should (i) increase treatment effectiveness, (ii) facilitate consistency in practice, (iii) establish accountability of health service providers to funding sources, (iv) increase cost-effectiveness of treatment, and (v) improve the overall quality of treatment. In the field of addiction, however, consensus regarding the optimal procedures for identifying practices with sufficient empirical foundation to be considered “evidence-based” has not yet been reached. Nevertheless, the concept of “evidence-based practice” (EBP) is increasingly emphasized by providers, managers, payers, and regulators of behavioral health care. In this review, extant definitions and variations of this concept are reviewed, issues that should be considered prior to implementing EBP in real-world clinical settings are outlined, and finally, recommendations are delineated for policymakers who are shaping the role of EBP in addiction treatment.

Methods

For the present review of the concept of EBP in psychosocial addiction treatment, a literature search for publications concerning this topic within the past 10 years was conducted using databases including PubMed, google, and googlescholar, incorporating the following terms: evidence-based practices, psychotherapy, behavioral treatments, addiction, substance dependence, practice guidelines, principles, best practices, promising practices, criteria. In addition, current published documents concerning evidence-based practices for addiction treatment were reviewed from various sources both within and outside of the United States, including the National Institute on Drug Abuse, Substance Abuse and Mental Health Administration, the American Psychological Association, the National Institute for Health and Clinical Excellence, and Cochrane Reviews. Because pharmacotherapies were outside the scope of this review, searches were limited to publications and guidelines germane to psychosocial interventions for addiction.

What is EBP?

Stemming from the concept of “evidence-based medicine,” coined by clinical epidemiologists in the 1980s, the most widely cited formal definition of EBP comes from the Institute of Medicine. In 2001, the Institute of Medicine’s Committee on Quality of Health Care in America produced the Quality Chasm report, which underscored quality shortcomings in the U.S. health system, emphasizing the gross disparity between the care patients receive and the clinical practices supported by empirical evidence [4]. Implementing evidence-based diagnostic and treatment processes was therefore one of the Institute of Medicine’s recommendations to facilitate an urgently needed health system redesign. Adapting Sackett et al.’s definition [5, 6], the Quality Chasm report characterized EBP as: “the integration of best research evidence with clinical expertise” and patient values (p.71). The most debated components of this definition are the concepts of (i) best research evidence, and (ii) clinical expertise.

Best Research Evidence—Although it has been appropriately noted that the definition of best research evidence depends upon the nature of the clinical question (e.g., etiological

questions versus identification of the most efficacious treatment for a particular disease) [7], descriptions of this concept to date uniformly acknowledge a variety of sources from which data can be brought to bear on clinical decision making. These sources include randomized clinical trials (RCTs), quasi-experimental investigations, correlational studies, field studies, case reports, and clinical guidelines based upon professional consensus [8]. Moreover, it has been argued that the rigor of the study design may correspond to a hierarchical ranking denoting experimental integrity; on this basis, the value of the evidence for a particular approach could be “graded.” [9]. Evidentiary value encompasses the concepts of (a) evidence *quality*, or the extent to which bias is minimized in the context of the experimental design, and (b) evidence *strength*, which is inferred collectively on the basis of evidence quality, the size of treatment effects, the extent to which the outcomes reflect valid information about the populations and settings in which the study was conducted (i.e., internal validity), and the clinical utility and generalizability (i.e., external validity) of the findings [6,9]. Within this framework, RCTs are considered to be the least subject to bias, and therefore the most empirically “sound” source of evidence (i.e., that of the highest evidence quality). Table 1 depicts a hierarchical model of research evidence, drawing upon common elements of previously described systems for grading study quality [9–11].

As an alternative to weighting individual studies and drawing corresponding conclusions regarding the evidence basis for particular interventions, clinicians may draw upon published syntheses of study findings, typically in the form of systematic reviews and meta-analyses. Hierarchical models of research evidence place both of these methods in the highest tier alongside RCTs. *Systematic reviews* evaluate research evidence based upon pre-defined objective criteria. Over the past decade, the Cochrane Collaboration and the Agency for Healthcare Research and Quality have accelerated the dissemination of synthesized information concerning health care practices through systematic reviews [12,13]. Although these reviews may or may not use meta-analytic techniques, the standard methodology for evaluating the strength of evidence in *meta-analyses* involves the calculation of an effect size, or summary statistic depicting the magnitude of the treatment effect, averaged across studies. While this method provides a useful metric from which to infer the utility of a treatment approach for a population or subgroup, some disadvantages of this technique warrant consideration. Specifically, the use of aggregate estimates of effect size may obscure qualitative differences between the individual studies, including variations in experimental integrity, subject characteristics, and study endpoints. Moreover, meta-analyses are subject to publication bias (also known as the “file drawer problem”), in that studies showing an effect of a treatment are more likely to be published than those showing no effect, thereby biasing the pool of clinical data from which meta-analyses are conducted. Nevertheless, synthesized reports on treatment effectiveness, whether in the form of meta-analyses or systematic reviews, remain a valuable resource to inform clinical decision-making.

Among the many constituencies advocating for the use of EBP in behavioral health, some have proposed highly specified criteria that reflect the number and types of trials required to establish a treatment as “evidence-based.” To this end, in 1995, the American Psychological Association’s Division of Clinical Psychology published criteria for identifying evidenced-based treatments, formally labeled “empirically supported treatments.” Highlighting the distinction between treatment *efficacy* (i.e., clinical benefit produced by the intervention in the context of controlled research) and *effectiveness* (i.e., clinical benefit produced by the intervention in a clinical setting under naturalistic conditions), the criteria for empirically supported treatments require demonstration of efficacy in at least two investigations conducted by independent research teams [14]. Using a graded system, the criteria for empirically supported treatments specify that an intervention with evidence in favor of its use from a single study or from multiple studies conducted by the same research group is considered *possibly efficacious* pending replication. While studies demonstrating clinical utility of an intervention

outside of the experimental setting are considered important for the translation of manualized interventions studied in RCTs into real-world clinical settings, the designation of a treatment as an empirically supported treatment does not require evidence of effectiveness; rather, efficacy is considered paramount [15].

Critics of empirically supported treatments' dissemination have argued that interventions established through efficacy research are unlikely to generalize to "real world" clinical settings [16,17]. Contrary to this argument, however, an emerging body of effectiveness research has yielded promising evidence for psychotherapy approaches previously established through efficacy research [18,19]. Effectiveness studies are not without their limitations, however; clients in some effectiveness studies receive more treatment than is routinely provided in efficacy trials and achieve treatment effects of a smaller magnitude than that observed in efficacy studies [20]. Moreover, though high in external validity, the research designs employed are often problematic with respect to internal validity.

Clinical Expertise—The notion that the clinician's expertise and experience are key components of the science-to-practice translation is well accepted [14,15]. Numerous elements constitute clinical expertise, including scientific expertise to guide evaluation and use of research evidence, awareness of individual patient characteristics as they influence treatment needs, interpersonal ability, awareness of the limits of one's clinical skill set, and clinical decision-making [15].

Standards and regulations regarding the level of training required of clinicians delivering addiction treatment directly impact the extent to which clinicians in such settings evidence these elements of expertise, however, and recent studies suggest that the current educational requirements for substance abuse counselors fall short as a means of preparing them to adopt EBPs. Specifically, the minimum educational requirements in most states fail to support the development of skills to review and understand research evidence; according to a recent study of state requirements for the training of addiction counselors in 31 states, only one state (3%) mandated coursework in research and evaluation [21]. Moreover, the association between level of training (i.e., as indicated by degrees and certification) and innovation adoption is well-established [22,23]; thus, the potential success of EBP dissemination efforts in addiction treatment settings will depend, in part, on the pre-existing level of education and training of the workforce. Nevertheless, the majority of U.S. states require less than college education for entry to the field [21]. Increasing the rigor of training, certification, and licensing requirements for the addiction treatment workforce is therefore an important consideration as a means of facilitating successful technology transfer [22,24].

A wealth of evidence suggests that interpersonal skill is a particularly important aspect of clinical expertise [25], and individual therapist effects account consistently and significantly for variance in outcomes [26–28]. As such, scientific experts recommend that psychosocial EBP dissemination efforts in addiction focus on a limited set of core change principles with corresponding skill sets that can be widely applied to clinicians with varying levels of experience [29]. Arguably, a key component of these principles would involve skills to establish and maintain a therapeutic alliance, along with techniques that facilitate use of the alliance to promote behavior change.

Variations in the concept of EBP—Although several aspects of the guidelines set forth by the APA Division of Clinical Psychology have been sources of controversy [30], their initiative to disseminate information on empirically supported treatments was followed by numerous ongoing efforts to develop EBP guidelines. In the process of accelerated efforts towards EBP implementation, however, a variety of terms have been utilized to describe documented sets of guidelines, some of which have meaningful distinctions. Apart from the

term EBP, two additional broad categories of documents that summarize recommendations for translating research evidence into clinical practice include: *practice guidelines* and *best practices*. Although numerous other terms have been used, they generally fall within the scope one of these three categories of recommendations.

Practice Guidelines: According to the Institute of Medicine, *practice guidelines* are “systematically developed statements to assist practitioners and patient decisions about appropriate health care for specific clinical circumstances” [31]. These statements are developed through a consensus process that includes clinical and research experts in the appropriate field, and may also elicit input from health care provider organizations, consumer groups, and government agencies, depending upon the scope and purpose of the guidelines. In terms of content, practice guidelines may include approaches to the prevention, diagnosis, or treatment of an illness [32]. Content may be drawn from various theoretical frameworks, and flexibility is allowed in the actual implementation of the practice.

Practice guidelines may be referred to as protocols, standards, or algorithms, and vary widely in their level of detail, ranging from an extensive manual to a summary article in a peer-reviewed journal. For example, the American Psychiatric Association’s practice guidelines for addiction treatment are a 276-page chapter of a book on practice guidelines in psychiatry [33]. This comprehensive document synthesizes research evidence and clinical and expert consensus in the form of both a literature review and clinical recommendations to guide the selection of appropriate modalities, levels of care, and disease management practices for the major substances of abuse. Another set of practice guidelines was put forth by the National Institute on Drug Abuse; formally termed *principles* of drug abuse treatment, the publication describes 13 concepts or themes defined as “a set of overarching principles that characterize the most effective drug abuse and addiction treatments and their implementation [34,35].” Although the NIDA principles include broad concepts such as “effective treatment attends to multiple needs of the individual, not just his/her drug use,” these principles may be appropriately categorized as practice guidelines, given that they are intended to help clinicians make empirically informed treatment decisions. Unlike EBP manuals for addiction treatment, which contain highly specific descriptions of session content, generally centering around a specific theoretical orientation, practice guidelines (a) are not based on a single theoretical base; and (b) vary widely in the extent to which specifications are provided to inform the implementation process.

Best Practices: Rather than serving as a clinician’s guide, the purpose of *best practice* documents is to guide treatment program planning and to outline processes that facilitate dissemination of research-based intervention strategies to clinical settings [32]. The content of these documents often includes guidelines for service delivery, such as recommended scope of services, assessment and intervention techniques, considerations when treating special populations, and processes for coordinating treatment with other types of services. As such, best practice documents often inform policy by describing optimum standards of treatment service delivery for addicted populations and subgroups with special needs. In so doing, these recommendations may also inform the advancement of standards for training of clinicians in the addiction field. Best practice documents germane to addiction treatment have been published by the Addiction Technology Transfer Center [36], the Institute of Medicine [1], the Network for the Improvement of Addiction Treatment [37], the National Quality Forum [38] and the Iowa Consortium for Substance Abuse Research and Evaluation [39], among others.

Evaluation Research on Guidelines: Practice guidelines and best practices are not always mutually exclusive, posing a challenge to the standardization of terminology used to inform EBP dissemination efforts. For example, the Center for Substance Abuse Treatment set forth a comprehensive set of 47 consensus-based Treatment Improvement Protocols (TIPs), which

have also been referred to as “best practice guidelines.” Although some of the TIP manuals are indistinguishable from practice guidelines (e.g., TIP 40: Clinical guidelines for the use of buprenorphine in the treatment of opioid addiction), a sizable subset fall clearly into the “best practice” domain as defined above, such as TIP 46, which addresses administrative issues fundamental to running an outpatient treatment program, and TIP 38, which describes the importance of integrating vocational and addiction treatment services with corresponding process recommendations.

The TIPs were originally developed in 1993 and were disseminated gradually to all state Alcohol and Substance Abuse Directors within the United States, Addiction Technology Transfer Centers, and individuals in the U.S. Department of Health and Human Services. Subsequently the outcomes of the TIPs dissemination efforts were evaluated scientifically to continue to inform the process of using empirically derived knowledge to refine clinical service delivery [40]. Aside from the TIPs evaluation project, however, the quality and outcomes of implementation of practice guidelines in addiction treatment have rarely been studied [41]. The absence of relevant data to shed light on the utility of best practice and practice guideline documents in the technology transfer process is limiting; not only is it unclear whether these guidelines adequately meet the needs of treatment professionals, but without such data, there is a limited basis for improving this type of dissemination resource.

Despite awareness of and positive attitudes towards the TIPs, the majority of clinicians surveyed reported difficulty in using them in practice [41]. Studies are needed to (i) evaluate the effectiveness of existing protocols as tools for EBP implementation, and (ii) identify key components of protocols and guideline materials to maximize clinical utility and the likelihood of implementation and sustainability.

What are EBPs for the Treatment of Substance Use Disorders?

The idea of utilizing EBPs in community treatment settings for substance abusers is a controversial one. As reviewed earlier, although several sets of criteria for designation as an EBP have been published, there is currently no consensus in the field of addiction treatment research as to which evidence standards to use for defining EBPs. Nevertheless, there are increasing federal and state initiatives emphasizing the implementation of EBPs in addiction treatment settings as a priority. At the federal level, for example, SAMHSA has named the use of “evidence-based programs and strategies” among the 10 indicators of quality care in the context of the National Outcomes Monitoring System [42]. Among the many state initiatives currently in process, Oregon’s Senate Bill 267 represents a phased, yet fiscally aggressive, effort to implement EBPs for youth and adults at high risk for involvement in the criminal justice system, including substance abuse treatment settings. This legislation requires that state agencies spend 75% of their budgets (federal and state dollars) on EBP-related activities [43]. Correspondingly, a list of EBPs for substance use disorders was generated to guide implementation of this legislation [44]. This list joins several others developed by various research and professional consensus groups to determine which treatments meet sufficient standards of evidence quantity and quality, albeit varied ones, to be considered EBPs. Among the sources of compiled lists are the American Psychiatric Association, the American Psychological Association, SAMHSA’s National Registry of Evidence-Based Programs and Practices (NREPP) [45], the University of Washington Alcohol and Drug Abuse Institute, and numerous meta-analyses and reviews [8,20,46–48]. See Table 2 for a description of the criteria for inclusion in each of these lists. Although such lists serve a legitimate purpose, they also have drawbacks. Among the most frequently cited concerns are that (i) EBPs might be used incorrectly or with insufficient fidelity by clinicians who do not have relevant training and/or expertise to facilitate proper delivery of the interventions; (ii) the use of manualized EBPs will result in less individualized treatment and, consequently, poorer quality of care [30]; and (iii)

EBPs may be used for political purposes [49]. Moreover, in light of research delineating the importance of the therapeutic relationship in affecting treatment outcomes, it has been argued that the “practice” itself is not as important as the nature of the therapist-client relationship; thus, in contrast to the emphasis on treatments or techniques that work, Division 29 (Psychotherapy) of the American Psychological Association compiled a list of “psychotherapy relationships that work” [50]. This serves to highlight the core elements of the therapeutic relationship that impact the course and outcomes of treatment across many, if not all forms of interventions for addictions. Nevertheless, not all elements of the therapeutic relationship can be readily evaluated using rigorous experimental methodologies (e.g., RCTs). This raises the question of whether the evidence hierarchy ought to be modified so as not to preferentially select therapy techniques while deemphasizing the therapeutic relationship [51].

When comparing lists of approved practices, which are based on several widely cited EBP criteria, the number and types of EBPs on such lists vary widely for reasons apart from the quality of the evidence. Likewise, more rigorous criteria sets are not consistently associated with smaller numbers of corresponding EBPs. This is largely due to the disparate selection processes for interventions to be reviewed; for example, NREPP accepts voluntary submissions for review; thus the interventions meeting minimum criteria are essentially “self-selected,” thereby biasing the pool of treatments. Second, because lists are not always updated in a manner commensurate with the expansion of corresponding scientific literature, they can easily become outdated. This is particularly problematic for the EBP list that was generated by the American Psychological Association, which was last updated formally by a designated task force in 1998. This list excludes well-studied interventions such as 12-Step Facilitation, contingency management, and others that would clearly meet the criteria. Finally, pharmacological treatments have not been consistently evaluated by the various EBP workgroups. Oregon AMH lists some, but not all FDA-approved medication treatments for substance dependence; however, the practice of “medication management” is listed as an EBP but with no description of pharmacotherapies that fall under that term. Furthermore, NREPP and the American Psychological Association do not include any pharmacotherapies on their EBP lists.

Treatments that Don’t Work—It has been cogently argued that identifying the interventions for which there is the strongest empirical evidence of efficacy and/or effectiveness is equally as important as knowledge of which treatments are *ineffective* or perhaps even detrimental to the clinical course and outcomes of addicted patients. As such, to the extent that lists of EBPs are utilized to drive the development and refinement of addiction treatment programs, lists of discredited treatments may help providers avoid ineffective ones. To this end, a recent Delphi survey delineated a set of intervention approaches that are contraindicated treatments for addiction [52]. A list of these treatments is provided in Table 3.

While the treatments that are considered to be effective are established as such through empirical research, the absence of efficacy studies does not render an intervention approach ineffective [8]. This important argument underscores one of the problems with reliance upon well-studied interventions in shaping the treatment system. This may, in effect, exclude interventions that have not had the opportunity to accumulate evidence in support of their use. Certain easily or already well-standardized approaches to addiction treatment are more likely to be tested in RCTs (e.g., pharmacotherapies, cognitive behavioral therapy), thereby biasing the pool of available interventions by including only those that have generated the most scientific interest.

Considerations for dissemination of EBPs

In the face of rapidly burgeoning enthusiasm about disseminating EBPs, there is an urgent need to inform the implementation process with new empirical knowledge. Because dissemination

research is a relatively new area of study in the addiction field [41], little is known about how to optimize evidence-based innovation adoption and sustainability. The extant body of research in this area does, however, point to some fundamental components of the implementation process to consider when forming a dissemination plan. These components are reviewed in this section.

Workforce Barriers—Workforce characteristics are important determinants of EBP adoption. Providers' familiarity with EBPs, perceptions of their effectiveness, and attitudes towards them are each associated with the likelihood of successful implementation [53–55]. Spreading awareness of EBPs and their effectiveness is a complex process which requires support from the addiction treatment system's infrastructure. Nevertheless, surveys of the addiction treatment system, such as the National Survey of Substance Abuse Treatment Services [56], consistently reveal gross inadequacies in this infrastructure, particularly in the leadership, workforce, and information systems fundamental to supporting quality evidence-based care. System-level change has therefore been an emphasis of numerous discussions in recent years concerning EBP dissemination strategies [56–59].

Intervention Fidelity—In the face of nonstandard implementation, the transfer of EBPs into clinical settings can be problematic. Research consistently shows that accurate implementation of EBP protocols is associated with positive clinical outcomes [60,61]. As such, fidelity measurement is used to assess the extent to which an EBP is being implemented as intended. As yet, there is no consensus as to how to optimize fidelity assessment of EBPs for substance use disorders. Typically, survey research methods aimed at providers are utilized to examine the extent of EBP implementation in treatment programs. This approach is not without drawbacks, however. When surveyed, providers may over-estimate the extent to which they utilize EBPs, including those for which they have received no formal training [62]. Inaccuracies in reporting are even more likely in the context of pressures arising from mandates regarding EBP delivery. Likewise, although direct observation of clinical activities might overcome some of the limitations of survey research methodology, such observation at a single time point may capture the practitioner's ability to conduct an EBP, while leaving the nature of their routine clinical practices largely unknown.

Implementation researchers are nevertheless making strides in developing fidelity assessment methods that overcome some of these problems. One such approach was described in a recent report from the National Implementing Evidence-Based Practices Project [63], from which the first systematic study of the fidelity of EBP implementation across a large number of sites (N=53) was performed. In this longitudinal study of dissemination of 5 EBPs for mental health and co-occurring disorders, trained fidelity assessors conducted site visits before and repeatedly after a 1-year EBP implementation phase. Fidelity was assessed using a multimethod approach that included interviews with site practitioners, observation of clinical activities, interviews with clients, and chart reviews. The integration of these evaluation methods, coupled with repeated measurements over time, provides a rigorous model for fidelity assessment, one that is consistent with prior recommendations based upon a review of fidelity measurement methods in psychosocial treatment research [64].

Practice-based Evidence—Given that the evidence base for psychosocial treatments for addiction is acquired largely from RCTs, EBP dissemination efforts focus on transporting specific theoretically based *approaches* with a relative de-emphasis on the level of competence of the individual therapist. Variability in clinicians' level of competency is minimized in psychosocial RCTs through the selection of highly qualified and educated therapists coupled with rigorous training, supervision, and use of manuals to inform practice. Nevertheless, within the psychotherapy literature a number of studies and meta-analyses have reported moderate to large effects of individual therapists on clinical outcomes [65], often in the absence of observed

differences between psychosocial treatment approaches of varying orientations [66]. These observations have formed the basis of a rationale for an approach that emphasizes *practice-based evidence*.

Using practice-based evidence, client outcome data are gathered from routine practice and used to provide therapists with real-time feedback regarding the impact of their interventions on client functioning. The delivery of feedback to therapists, when coupled with suggestions to improve clinical performance, has been touted as a complementary and effective means to improve the quality of care and outcomes [67,68]. This model, which historically has been implemented in psychological treatment settings in the United Kingdom [69], is currently the focus of a statewide mental health services initiative in Utah, in which “mental health vital signs” are monitored routinely using a 5-minute self-report instrument [67]. These “vital signs,” which correspond to several domains of functioning, are analyzed using a software system that tracks clinical trajectories. Using this system, patients who are at risk for “treatment failure” are flagged, with corresponding feedback and recommendations delivered to clinicians. The practice-based evidence model can also be used at the systems level; for example, in the context of performance-based contracting, administrative and clinical practices that are linked with the achievement of targeted clinical performance indices can be adopted by the system, an approach that was successfully adapted and instituted recently in Delaware [70].

Evidence-based Caveats—Given that the primary goal of implementing EBPs is to improve client treatment outcomes, treatment-related procedures that are thought to positively affect such outcomes are worthy of consideration. NIATx, for example, developed process improvement strategies that affect important outcome dimensions for substance abusers, including treatment retention and access to care [71,72]. Although the NIATx approach is, like EBPs, a manualized approach to improving treatment process and outcome, it does not lend itself to testing in RCTs and thus does not fit squarely into the EBP model. Other such treatment processes include urine monitoring, a common practice in addiction treatment that has not been subjected to testing in controlled research. Conceptually, it is unclear where these procedures fall in the continuum of EBPs. Despite their apparent utility, it is unclear how such processes will be viewed and to what extent they will be supported at this time, given the emphasis of current policy on EBP implementation.

Recommendations

In planning the necessary steps to align treatment providers with policy driven EBP initiatives, a clear set of goals must be established. To successfully impact real-world treatment, a feasible set of objectives that are adaptable to different types of settings and that take into account the limitations of the current system of care is needed. There is compelling evidence reviewed in this paper that the current treatment system in the United States is ill-suited for the immediate goal of implementing manualized psychosocial EBPs. On the other hand, the potential for implementing manualized EBPs successfully outside of the United States is likely best in areas with relatively undeveloped addiction treatment systems. In these regions, new providers are likely to be receptive to the idea of building the foundation of their treatment programs on EBPs, provided that the protocols are appropriately adapted for use by their respective cultures. In parts of the world with well-developed addiction systems of care, such as the U.S., Europe, and Australia, rather than focusing efforts on disseminating manualized EBPs, a more realistic proximal goal is to inform addiction treatment with scientific evidence by providing clinicians with training in core evidence-based skills that tangibly influence their practice. The proper use of these skills should be expected to improve clinical outcomes, for which measurement systems are already in place (e.g., the National Outcomes Monitoring System model). Of note, clinicians report that skills that can be learned and put into practice rapidly are more appealing than those that require large-scale system change [73], underscoring the need to focus training

efforts on a limited set of key techniques. Moreover, a number of steps will be required to create a workforce that is receptive to “evidence-based skills training” as well as pharmacotherapies for addiction. Recommendations are offered below regarding target clinical skills for evidence-based skills training and strategies to encourage innovation adoption:

1. *In determining which practices are to be target EBPs for implementation, employ a stakeholder consensus process.* Four sets of criteria for designating EBPs as such were described in this review. The most stringent criteria set forth by the American Psychological Association greatly limit the practices that can be considered evidence-based, while the Oregon Addictions and Mental Health Division criteria, requiring an evidence base that is less robust, allow for a greater array of empirically based techniques. Though, clearly, each approach has its strengths and limitations, any working EBP list for the purposes of informing policy decisions must be developed with consideration of the context of local patient needs and available treatment resources. Rather than relying exclusively upon one of these established EBP criteria sets, it is recommended that any working list of evidence-based techniques be reviewed by stakeholders to arrive at consensus recommendations for dissemination, taking into consideration the interventions that are the most feasible, affordable, and suitable to the patient needs of the specific region.
2. *Train clinicians to use easily learnable and widely applicable evidence-based skills.* Carroll and Rounsaville [29] describe two essential therapeutic goals of EBPs for addiction treatment: (i) improving impulse control and (ii) reducing craving. Correspondingly, they describe a few core principles for eliciting behavior change that may be readily disseminated to enable clinicians to effectively target these goals. These principles are drawn from various theoretical models, including learning and conditioning theories of addictive behaviors, the transtheoretical model of change, behavioral economics, and social learning theories. Improving impulse control can be achieved by promoting thoughtful and pre-planned behavior as well as actions/activities that are rewarding yet incompatible with substance use. In addition, by providing clients with an understanding of how impulsive behaviors arise, they can learn how to intentionally disrupt the process that results in such behaviors. Generally, reductions in the frequency and intensity of cravings are thought to result from any intervention that facilitates abstinence in the context of an adaptive social environment. Thus, as a third target of evidence-based skills training, we propose that promoting an adaptive social environment be added to therapeutic goals (i) and (ii) above. Clearly, a wide range of evidence-based skills are applicable to this and the two therapeutic objectives outlined by Carroll and Rounsaville.

First, principles of contingency management should be targets for dissemination, emphasizing the effects of reinforcing abstinence or other non-drug alternative behaviors on clinical outcomes, including treatment retention, adherence, and abstinence. In this context, urine monitoring procedures can be introduced as a means of promoting improved outcomes, including reinforcing compliance with pharmacological interventions aimed at reducing cravings and/or psychiatric symptoms. **Second**, motivational interviewing and brief intervention skills training is recommended as a means of promoting reductions in substance use. Given that the impairment in brain regions associated with impulse control can be at least partially reversed with abstinence, motivational interviewing is considered a cost-effective approach for targeting impulsive drug-seeking and use. **Third**, core cognitive-behavioral coping skills and relapse prevention strategies, including coping with risky situations and cravings, respectively, can be easily taught and understood by clinicians with a range of education and experience. **Fourth**, training in couples and family counseling skills is suggested as a means of optimizing the substance user’s social

environment. Skills training in this area would be aimed at engaging the support of the substance abuser's family for behavior change as well as restructuring couple and family interaction patterns in ways conducive to abstinence. As suggested by Carroll and Rounsaville, to the extent that any and all of these evidence-based skills can be taught using Web-based training techniques, a larger number of trainees can be reached while minimizing cost and enabling clinicians to train at their own pace. Nevertheless, maintenance and practice of these skills will require some supervisor-facilitated demonstration and rehearsal, according to dissemination research [74]. See Table 4 for examples of manualized psychosocial interventions that apply each of the four skill sets that are recommended targets for dissemination.

3. *Train the workforce to use evidence-based skills using established implementation methods.* Studies have consistently shown that disseminating information describing EBPs (e.g., practice guidelines) to clinicians alone does not change practice behaviors [75–78]. As such, more comprehensive implementation models are needed, and a growing body of research has established and tested several such approaches. The most well-developed implementation model to date in the behavioral health area was designed by the National Implementing Evidence-Based Practices project [79]. Each of the eight states involved with this project identified two EBPs for dissemination, and with input from major stakeholders, “implementation toolkits” were developed to support technology transfer [73]. These toolkits included users’ guides, implementation tips for program leaders, introductory videos, PowerPoint presentations, brochures, videos and workbooks for clinicians, Web-based resources, and fidelity scales. The types of information included in the toolkit materials ranged from suggested practice processes (e.g., staffing, training, meeting structure, supervision, and fidelity monitoring) to the rationale for adopting EBPs generally and answers to commonly asked questions about the target EBP. These toolkits, coupled with a consultant-trainer assigned to each site constituted the core elements of the model. The consultant-trainer provided training and clinical supervision to program leaders and clinicians who were delivering the EBPs, with a half-day introductory session to the target EBPs for stakeholders and 3 days of clinical skills training for clinicians. The trainer was subsequently available to advise both the front-line clinicians and program leaders on an ongoing basis for one year, followed by one year of support of lower intensity to facilitate sustainability. This multimethod implementation program is an excellent model for the dissemination of core evidence-based skills for addiction treatment. Even if financial concerns preclude the employment of a consultant-trainer over an extended timeframe, studies clearly show that skill development and implementation are optimized through the use of learning activities such as modeling, role play, and job shadowing at a site where a practice is well established [74,80]. Thus, integrating the use of “toolkit” materials with in-service training and consultation would maximize the likelihood of improving clinicians’ practice behaviors.

Given the wealth of evidence indicating that feedback on practice patterns strongly impact practice behaviors [75,81,82], it is clear that fidelity monitoring [63] as well as ongoing supervision and consultation [74] are essential components of the technology transfer process. Indeed, studies comparing various counselor training methods for EBPs, such as motivational interviewing and cognitive behavioral therapy, have found that supervision and feedback increase post-training proficiency, relative to counselors who receive training via a workshop or seminar without feedback or supervision [83–85]. Optimally, feedback provided in the context of fidelity monitoring can be complemented with feedback to practitioners regarding client outcomes. Given the modest association between fidelity and treatment outcomes, striking a balance between these two forms of feedback should enable

clinicians to adapt the practice to meet individual client needs while maintaining an acceptable degree of fidelity. Using the implementation model described above, coupled with the multimethod fidelity evaluation protocol described earlier, moderate to high fidelity was achieved [63].

4. *Assess organizational readiness for change and adapt the implementation approach as needed.* Addressing the psychological dynamics of change at both the individual and program levels is fundamental to instituting new practices [86]. Programs and providers must be sufficiently motivated to engage and sustain a change process before implementation efforts can be effective. *The Change Book* [87], an Addiction Technology Transfer Center publication, describes 10 steps for strategic development, implementation, and evaluation of innovation adoption efforts for addiction treatment systems. The 4th of the 10 steps involves assessing the program's readiness to change. This can be achieved by using instruments such as the Texas Christian University Organizational Readiness for Change survey, which was designed specifically for use in addiction treatment and health services fields [88]. Direct conversations and focus groups are also powerful means of gathering these data, with the goals of identifying organizational barriers to change; supports for implementing changes (e.g., funding, desire to improve outcomes); implications of the change for agencies, administrators, counselors, and clients; features of the organizational structure currently in place to support change; and the organization's stage of readiness to change. Because organizations may naturally resist change, adapting implementation strategies to an agency's stage of readiness to change can increase the odds of success.
5. *Increase access to training and informational resources.* Counselor attitudes regarding acceptability of EBPs may be amenable to change using management practices that enhance access to new, clinically relevant knowledge. Training is an effective means of disseminating information about the utility of EBPs and may be associated with more favorable attitudes towards them [89]. To this end, the Addiction Technology Transfer Centers of NIDA and SAMHSA have a number of training materials available for providers. The use of external sources of information facilitates the transfer of research information into real-world practice settings [90]; thus, providing Internet access, encouraging use of research-based publications, and promoting clinicians' involvement in professional development activities are all both necessary and effective means of enhancing absorptive capacity. Recently, the use of a relatively simple, low-cost counselor toolkit for implementation of a motivational interviewing exercise proved to be an effective means of translating core evidence-based techniques into practice across 6 community based addiction treatment sites [91]. Introducing these types of resources coupled with training activities would serve as part of a persuasion process to set the stage for successful EBP adoption [23].
6. *Increase clinician and organizational exposure to EBPs.* For addiction treatment programs, it is now well documented that involvement in a research network such as NIDA's Clinical Trials Network enhances EBP adoption [92], particularly for pharmacotherapies [93]. The unique opportunity provided by such networks for addiction treatment programs to implement a novel intervention approach on a time-limited basis, a condition referred to as "trialability," [94] not only provides exposure to treatment innovations, but also dampens the financial burden that might otherwise be posed by EBP mandates by providing training, study materials, and financial support needed for successful implementation. Exposure to contingency management in the context of Clinical Trials Network participation resulted in successful adoption of these techniques in at least one large hospital system in New York [95]. Thus,

increasing the involvement of addiction treatment organizations in research networks is an important step towards successful EBP adoption.

Conclusions

The transfer of knowledge acquired through addiction intervention research into clinical settings has great promise as a means of increasing treatment effectiveness and facilitating greater consistency in practice. The recommendations made towards this end in this paper are based upon a review of the literature concerning EBP criteria and dissemination in the area of psychosocial addiction treatment. Of note, because pharmacotherapy was outside the scope of this review, we did not address the important issue of evidence-based pharmacotherapy practices for addicted populations. Moreover, because there is a paucity of data to inform how practice guidelines, best practices, and EBP lists influence patient outcomes, conclusive recommendations regarding the use and future development of these resources cannot be made at this time. These limitations notwithstanding, several conclusions regarding EBP dissemination are warranted.

In initiating the process of EBP dissemination, it is important to consider not only the strength of the evidence basis for the target intervention(s), but also the features of the organization and workforce that will be instituting the practices. At both the organizational and individual counselor levels, receptivity to EBPs and research more generally are important precursors to successful dissemination. Facilitating positive perceptions and attitudes regarding the acceptability of EBPs may be achieved by enriching the research culture in clinical settings using some of the recommended dissemination strategies presented in this article. Variations in levels of training and competency of individual clinicians employed in community addiction treatment settings add another layer of complexity to EBP dissemination efforts, particularly given that manualized EBPs are typically delivered and validated in the research context by highly trained and educated clinicians. As such, the utility of EBP lists of manualized interventions that are currently informing policy around EBP mandates in addiction treatment is limited. Likewise, the alternative to EBP dissemination presented in this article (i.e., evidence-based skills training) is thought to be a more effective and feasible means of transferring evidence-based intervention strategies into clinical settings.

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Table 1

Levels of Evidence Used in Evidence-Based Practice

Level 1: Experimental Designs or Syntheses of Experimental Studies
Randomized Controlled Trials (Double Blind, Single Blind, or Unblinded)
RCTs ideally by more than one research team
Systematic Reviews
Meta-analyses
Level 2: Quasi-Experimental Designs
Non-randomized Controlled Trials
Use of matched controls
Multiple time series studies
Cohort comparisons between groups receiving treatment vs. no treatment
Correlational studies with systematic observation across cases/programs
Level 3: Expert Consensus/Opinion
Single Case Reports/Observational studies
Consensus opinions of clinically experienced experts
Expert committee recommendations
Best practice guidelines assembled by expert consensus
Level 4: Personal Communication

Table 2

Models for evaluating strength of evidence: minimum criteria for EBP designation

I.	University of Washington Alcohol and Drug Abuse Institute
a.	The approach has been scientifically studied (no study design requirement) and may or may not have been published in a peer-reviewed journal
b.	The approach has demonstrated benefits in relation to treatment goals
c.	The approach has been standardized to facilitate replication
d.	The approach has been studied in >1 setting with consistent results
e.	A fidelity measure either exists or could be developed from available information
II.	National Registry of Evidence Based Programs and Practices (NREPP)
a.	The approach has demonstrated positive outcomes ($p \leq 0.05$) in ≥ 1 studies
b.	The results of the research have been published in a peer-reviewed journal or documented in a comprehensive evaluation report
c.	Sufficient documentation exists in the form of manuals, training materials, etc. to facilitate dissemination of the approach
III.	Oregon Addictions and Mental Health Division
a.	The approach is consistently supported by RCTs or rigorously conducted and designed evaluations (minimum ≥ 2 studies in peer-reviewed journals).
b.	The elements of the approach are standardized and replicable
c.	If an approach or element(s) of an approach established through (a) is tested in a setting or with a population that is difficult to study using a rigorous design, the research must be published in a peer-reviewed journal.
IV.	American Psychological Association, Division 12 (Clinical Psychology)
a.	The approach has demonstrated efficacy in ≥ 2 randomized controlled trials (RCTs) (i.e., through demonstrated equivalence to an already established treatment or superiority to another treatment) OR a large series (>9) of single-case design experiments
b.	Efficacy has been confirmed by ≥ 2 independent investigation teams
c.	If (a) and (b) are not met, an approach with demonstrated efficacy in ≥ 1 investigation is designated “possibly efficacious” (vs. “well-established”)
d.	Clear descriptions of the approach in the form of manuals or other materials are used
e.	Sample characteristics are specified

Table 3**Discredited Techniques in Addiction Treatment**

Certainly Discredited

Electrical stimulation of the head
Past-life therapy
Electric shock therapy
Psychedelic medication
Ultra-rapid opioid detoxification under anesthesia for alcohol dependence
Neuro-Linguistic Programming
Scared Straight
Stimulant medications for alcohol dependence

Probably Discredited

DARE prevention programs
Synanon-style boot camps
Apomorphine for alcohol dependence
Lithium carbonate for alcohol dependence
Electrical aversion therapy
Beta-blocker for alcohol dependence
Dopamine precursor for alcohol dependence
Chlordiazepoxide for alcohol dependence
Videotape self-confrontation

Source: Fala et al. (2008)

Table 4

Examples of psychosocial interventions corresponding to four recommended skill sets for dissemination to clinicians in addiction treatment settings

Skill	Corresponding Interventions
1. Use of contingency management principles	Contingency Management (CM) Prize Incentives CM Community Reinforcement Approach (with and without Vouchers)
2. Motivational interviewing techniques	Motivational Enhancement Therapy Motivational Interviewing Brief Intervention
3. Cognitive behavioral coping skills/Relapse prevention strategies	Cognitive Behavioral Coping Skills Therapy Relapse Prevention Therapy Matrix Model
4. Couples/family counseling techniques	Behavioral Couples Therapy Multidimensional Family Therapy