

SYNERGIES

Rethinking Addiction: Translating Science into Evidence-Based Practices

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Abstract

Health care practitioners, training programs, systems of care, and policymakers established particular practices for treating addiction well before the emerging explosion of research took place. Such practices were not grounded in the best science available. There has been a substantial delay in adopting and implementing “evidence-based treatment” in practice. This review reflects on the most current scientific knowledge about substance use disorders. It provides succinct summaries of concepts and principles for which there is strong scientific evidence and offers recommendations for interventions and services. We conclude by briefly discussing a model of training in the empirically-based motivational interviewing approach.

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Introduction

Substance use disorders (SUDs) represent one of America's foremost health problems and the largest preventable and treatable health problem in our society today. SUDs are costly to the nation as a whole because of lost productivity, health care, and crime.^{1,2} More than 63,000 deaths from drug overdoses were reported in the United States in 2016.³ Alcohol use disorder remains highly prevalent and contributes to enormous loss of lives.⁴ Given the severity of the opioid crisis, as well as the high prevalence of other substance use disorders, it is urgent to effectively facilitate the adoption of highly underutilized evidence-based prevention and treatment strategies into systems of care and practice.

"I appreciate both how much the field has changed in regard to the adoption of evidence-based practices and how far we still have to go." (Personal communication from William R. Miller, 2018). I (Antoine Douaihy/AD) certainly identify with Dr. Miller's experience, and have since 1992 when I was attracted to working with people with addictions. I have learned so much during my more than 20 years of work in addiction treatment, education, and research. The good news is that the scientific research has exploded and has shown us an incredible deal about the concepts of SUDs and how they can be treated and prevented. Thousands of published clinical trials of addiction treatment have demonstrated either positive or negative outcomes, or even unexpected ones. I have had the privilege to be involved in a lot of trials and contribute to the diffusion of findings into clinical practice. The bad news is that a lot of the science still has not been translated into practice, and significant public skepticism remains despite these scientific advances. This is clearly the result of a research-to-practice gap that also has been seen in other areas of health care, and the unique development of American addiction treatment which evolved in relative separation from mainstream health care.⁵

Established clinical practices are challenging to change and require interventions at both systemic and individual provider levels.⁶ Furthermore, in the field of addiction, practitioners struggle to use treatment methods with scientific evidence of efficacy. We could say the issue is even more simple, yet more of a problem than that: there are a lot of practitioners providing treatments without an empirical basis. Sometimes, these approaches haven't been well thought out or systematized. They are individual, idiosyncratic, and untested. So patients are getting "something" — as some of it probably works if there's a strong therapeutic alliance there — but is it really the right treatment approach? In my clinical practice, I have a flexible view about evidence-based treatments, and I am more of an integrationist. But, integration isn't just throwing bits and pieces of techniques at patients. It means gaining competence in using empirically-supported treatments and using aspects of these treatments in a manner consistent with the conceptualization of the patient's problems. So how do we resolve this disturbing state of

affairs? I believe it starts with training in evidence-based treatments and practices. If health care practitioners become competent in empirically-supported treatments that work for the patients they treat, then they tend to keep using them. It becomes their clinical identity; and it's rewarding to feel competent.

The problem is, though, that the only thing we're doing worse as a field than using empirically-based treatments is providing empirically based training. And this presents the major question — even if we're providing training in empirically-supported treatments for addiction, do we have any idea whether we're teaching and disseminating these approaches in a way that medical trainees, clinical psychology interns, and other practitioners can truly learn? Later in this paper, I will discuss a model of training focused on motivational interviewing, one of the strongest evidence-based approaches for SUDs.

To explore the science-to-practice gap, we will focus on reviewing the findings from scientific studies on SUDs and discussing their implications for interventions, clinical practice, and systems of care. We cite both old and new studies, including multisite clinical trials, systematic reviews, and meta-analyses. We use the term addiction to refer to the full continuum of substance use disorders.

Neurobiology of Substance Use Disorders

Addiction is a neurobiological illness in which repetitive substance use dysregulates the circuitry of rewarding and adaptive behaviors and results in a drug-induced neuroplasticity. Reward neurotransmitters, such as dopamine and opioid peptides, mediate the acute reinforcing effects of drugs of abuse in the mesolimbic reward system that involves the nucleus accumbens and the central nucleus of the amygdala. These neurotransmitters also are dysregulated throughout the process of development of addiction. The drug-induced dopamine release and dopamine D2 receptors decreases are more significant and also associated with a dysregulation of brain stress systems that lead to increased corticotrophin-releasing factor (CRF) and decreased neuropeptide Y (NPY). The attenuated dopamine response to the drug is associated with decreased subjective reinforcing reward experience during the acute intoxication phase.⁷ Other neurotransmitters could be involved in the reward response, including endocannabinoids, GABA, and serotonin.⁸ The brain circuitry underlying the withdrawal phase involves the extended amygdala area as well as the habenula, and implicates neurotransmitters and neuropeptides such as CRF and norepinephrine.⁹ Parallel to these changes, a hypofunctional dopamine reward system leads to anhedonia during the withdrawal state.¹⁰ The craving phase (drug, cue, and stress-induced reinstatement) suggests an involvement of the prefrontal circuits that underlie salience attribution and other circuits in the amygdala that mediate conditioned responses.^{11,12} Involved neurotransmitters include dopamine, opioid peptides, glutamate, and CRF. Glutamatergic

systems in the ventral tegmental area affect the response to cues and to negative emotions, reinforcing the compulsive preoccupation with drug use.¹³ The changes in the reward and stress systems lead to the vulnerability for development of addiction and relapse in addiction. Excessive and repeated drug taking dysregulates the brain reward system, destroys the prefrontal cortical circuitry, and hyperactivates the limbic circuitry, leading to an inability to break a perpetual cycle of use despite any negative consequences. Genetic and environmental factors also can facilitate the dysregulation in the reward and stress system processes during the development of addiction. Identification of the molecular changes that contribute to the neuroadaptations within specific motivational circuitries associated with addiction and relapse potential is an area of research focus. Potential therapeutic targets for addiction treatment involve various brain areas, brain circuitries, and neurotransmitters. Strategies addressing pharmacotherapies that target endophenotypes associated with addiction, such as using cognitive enhancers to improve executive function and decision making, are being explored.^{14,15}

Diagnostic Classifications of SUDs

The American Psychiatric Association Diagnostic and Statistical Manual of Mental Disorders (DSM) has long been the standard for classification by behavioral health professionals in North America. Diagnostic classifications and criteria based on DSM have evolved over the past three decades. Early on, *alcoholism* and *drug addiction* were put in the same category as sociopathic personality disturbances, implying that people with addiction suffered from “deep seated personality disturbance (DSM-I)”¹⁶, which was clearly stigmatizing and indicative of an underlying brain or personality disorder. In DSM-II¹⁷, several terms were used to indicate different types of alcoholism, such as *episodic excessive drinking* and *alcohol addiction*. This terminology was inspired by the descriptions from a classic book by Jellinek (1960)¹⁸, *The Disease Concept of Alcoholism*, who adopted the word “alcoholism” as a generic term for alcohol-related problems. As in DSM-I, these disorders were still categorized under the personality disorders. DSM-III¹⁹ and DSM-IV^{20,21} shifted away from categorization of addiction as a personal pathology and identified two definitions: *substance abuse* and *substance dependence*. Abuse was defined as the presence of drug-related problems in the absence of a history of physiological dependence and adaptation. Alcohol dependence was identified as a cluster of interrelated behavioral, physiological, and psychological factors on a continuum of severity. DSM-5²² moved away from adopting abuse and dependence and recognized *substance use disorders* (SUDs) as occurring along a continuum of severity. This eliminated the “one size fits all” approach to substance use problems. Clearly, the distinction between “abuse” and “dependence” proved to be an arbitrary cut-point on a continuum of dimensions of use and impairment. Depending on the level of severity of substance use, different treatment approaches and strategies should be used. Focusing on a diagnostic label and

coercing individuals to “admit” an identity such as “alcoholic” or “addict” does not facilitate behavior change. Most importantly is to meet people where they are and work with them on what changes they desire to make. Even the writings of Bill W., co-founder of Alcoholics Anonymous (AA), emphasize the importance of working with people wherever they are presently,²³ and one should never impose a label on someone else; it is up to the individual to decide whether the “alcoholic” label is acceptable and helpful.²⁴ Practitioners who embrace the motivational interviewing spirit and style avoid labeling patients with names and diagnoses, especially those who do not see the substance use behavior as problematic. The existence of an *addictive personality* continues to be raised even in addiction treatment settings despite research demonstrating that people with SUDs reflect a wide range of personalities. In fact, no characteristic abnormal personality has been found among people with SUDs.^{25,26} The tendencies of an addictive personality most often mentioned are immature defenses such as denial, rationalization, projection, and poor insight. Defenses of people with SUDs appear no different from those without SUDs.²⁷ The disease model justified and disseminated treatment approaches based on confrontation to break the immature defenses that were presumed to be linked to SUDs. Confrontation is delivered usually with the intent to evoke fear, shame, or humiliation. All of the evidence regarding confrontational approaches points to no effect or harmful effect.²⁸

Public Health Perspective

A public health approach to SUDs embraces multiple factors that interact with each other. The agent dimension focuses on the addictive properties of the substances and their impact on brain functioning. The host factor focuses on the personal characteristics of individuals that make them vulnerable to addiction. Some of these developmental factors include the “difficult temperament” (distrust, aggressive sociality, cynicism) constellation, childhood problems with authorities, and poor psychological self-regulation.²⁹ Genetic risk factors also contribute to the vulnerabilities, but they are not deterministic. The environmental dimension involves the influence of family and friends and other peers, as well as religious, ethnic, and educational influences. Effective prevention and treatment approaches take all these factors into consideration, as well as the impact of their interactions. A comprehensive public health approach to treatment of SUDs should integrate prevention and treatment of HIV, hepatitis C, and other medical comorbidities and co-occurring psychiatric disorders. Another component of this approach should include naloxone distribution for opioid overdose prevention.

Psychological and Social Aspects of SUDs

Natural change or self-change is a fundamental process in understanding and addressing SUDs. Research has demonstrated that self-change is not limited to people with mild SUDs but also

may be seen in people with more severe SUDs.^{30,31} Social stigmas can interfere with the process of self-change. Many people who have substance use problems do not seek treatment because of stigma, which leads to social isolation and delay in the process of change. It is crucial to address social stigma and promote self-change at every therapeutic encounter and opportunity in the health care, social, and legal systems. Brief interventions, motivational advice, and personalized feedback can be helpful in facilitating the process of self-change. Treatment interacts with, and has the potential to facilitate, the self-change process.³² Evaluating individuals who enter treatment indicates that many of them have achieved some of the tasks of recovery before considering entering treatment. In fact, for many individuals, natural recovery and treatment-assisted change are intertwined and complementary.³²

There is established evidence to indicate that a person's motivation for change in substance use is transactional and influenced by interpersonal factors. One strong indication of interpersonal influence on motivation is the therapist to whom the patients are assigned. In one study looking at the impact of behavior therapy for problem drinking³³, nine therapists were trained in delivering the same behavior therapy. Patients' drinking outcomes were strongly predicted by the extent to which the therapists had manifested accurate empathy understanding while delivering behavior therapy. Even two years later, patients' drinking outcomes were strongly related to how empathic their therapists had been during treatment.³⁴ More recent research findings are consistent with previous research that indicates that therapists are not interchangeable, and their accurate empathy skills are related to better or worse alcohol treatment outcomes for their patients.³⁵ Other studies have likewise demonstrated large differences in drug use outcomes that are dependent on the therapist to whom patients had been randomly assigned.³⁶ Clearly, motivation for change is enhanced by the therapist's empathic style. Being empathic, or expressing accurate empathy as described by Carl Rogers (1959), the learnable skill of reflective listening, is by itself an evidence-based practice.³⁷ The empathic style versus the confrontational style fits well with other therapeutic modalities, such as cognitive-behavioral therapy and 12-step facilitation therapy.³⁸

In the general population, the rate of comorbid psychiatric and substance use disorders (co-occurring disorders: CODs) is high, and the rate is even higher in individuals involved in treatment for either disorder. Thus, comorbidity is a serious clinical entity in most settings that treat adults and youth. Without proper management, the comorbidity worsens the course of both disorders and affects treatment response. Although numerous theories explain the comorbidity, no single theory has shown overwhelming support, including the "self-medication hypothesis." It is well-established that parallel or sequential treatment approaches are ineffective for CODs. Variants of the integrated model of treatment focus on concurrent provision of services that address both conditions simultaneously,

ideally by the same team of practitioners in the same clinical setting.³⁹ These services incorporate assertive outreach approaches, and individual, group, family, residential, and pharmacological interventions. The integrated model has considerable empirical support for people with SUDs and severe mental illness.³⁹ Early intervention in the course of psychiatric manifestations or substance use, both in adults and youth, could have the potential to prevent the development of CODs and minimize the harmful effects of substance use.

There is strong research evidence on the role of family, concerned significant others (CSOs), and social network factors in the process of change.^{40,41} Involving family members and CSOs in treatment can significantly improve outcomes. Most importantly, family involvement is fundamental in treating adolescents and young adults with SUDs. Inclusion of parents and social support systems facilitates treatment retention for adolescents with SUDs.⁴¹ Families and CSOs can also play an important role in facilitating problem recognition and help-seeking behaviors in the individual with substance use problems. Intimate partner violence is highly prevalent in couples in which one partner has an alcohol or substance use disorder, and this should be addressed in treatment and prevention. Children's development and life outcomes are affected by the parents' psychiatric and substance use problems. Problem alcohol and drug use can also impede parenting and the provision of a safe and nurturing environment, leading to parental neglect and disruptions of family routines, as well as physical and sexual abuse.⁴² Children whose parents or caregivers have alcohol and drug use disorders are also at increased risk for medical and behavioral problems, including SUDs.^{42,43} These findings speak to the importance of intervening with children of parents with SUDs early on to prevent and treat any emotional, behavioral, and substance use problems.

Interventions for SUDs

The first phase of treatment is detoxification, referring to medical stabilization and a preparation for continued treatment. This phase is followed by "rehabilitation," which includes a wide range of services and treatment strategies to address the patient's targeted change goals. Treatment strategies usually incorporate multiple components, such as medications, and group and individual counseling using various behavioral and therapeutic modalities, along with involvement in mutual-support programs. Treatment can be provided in different settings in various doses, such as short-term and long-term residential programs, intensive outpatient and partial hospital programs, and individual counseling with medication management for SUDs and CODs. This phase is followed by the continuing care phase, which provides support for the behavioral changes accomplished in the previous phase and continues to focus on the recovery process.

Engagement in care and treatment outcome are hindered by discord that results from a mismatch between the goals of individuals seeking treatment and practitioner's/treatment program goals. For example, when the goals of practitioners (such as full abstinence

from alcohol) mismatch the goals of patients (such as reduction in alcohol use), discord ensues that could jeopardize the therapeutic alliance and lead to a potential confrontation, resulting in a suboptimal outcome. In fact, addressing inconsistent goals in treatment using a confrontational approach is likely to lead to poor outcomes. In medical practice, a major goal in illness management of chronic health conditions, including SUDs, is to lengthen spans of remission, shorten and reduce the severity of symptomatic episodes, and reduce the risk of return to use. To achieve these goals, long-term care is required. In monitoring and helping a person self-manage a chronic condition, expecting the recurrence of symptoms of the disorder (e.g., continued drug or/and alcohol use) is the most realistic and common-sense approach. Thus, episodes of substance use should be viewed as potential motivational opportunities rather than “failures.”

Increasingly, polydrug use (i.e., use of more than one drug in a given time period) has become the norm and is frequently reported among various populations who use drugs. Simultaneous polydrug use (i.e., use of more than one substance on the same occasion) also has been increasingly reported among a number of groups with drug use, including people with alcohol use disorders and adolescents.⁴⁴ Addressing the use of multiple drugs requires an approach that takes into account the limitations of the abstinence/failure dichotomy (“clean” or “relapsed”; “failure” or “success”) and accept and work toward realistic changes rather than looking for “magic bullets.”

Perceiving SUDs as a moral weakness that indicates a lack of self-control perpetuates stigma that can lead to a major obstacle in treatment. In addition, the stigma associated with SUDs often is perceived more significantly among women because of higher expectations about their value systems and their identities in society in general. The criminalization of people with SUDs is another major barrier to treatment linkage and engagement in care. Furthermore, waiting lists have the potential to worsen feelings of stigma and may result in the loss of a window of motivational opportunity.^{45,46} If treatment programs make some small systemic changes and provide even one brief motivational session and some self-help materials (“bibliotherapy”: interactive recovery workbooks) and use engagement skills as a prelude to “intake and data collection,” these approaches could be more effective than no intervention or a waiting list.^{47,48} A “street perception” that people with SUDs should “hit bottom” before engaging in change is one of the most salient obstacles to problem recognition and engagement in the recovery process. There is no reason to believe that nothing can be done until the person suffers severely from substance use to get ready for change. Positive reinforcement, unilateral engagement of family members, and brief motivational interventions have all been shown to facilitate motivation for change.

Multiple approaches in the treatment of SUDs have demonstrated no beneficial effects on outcomes of substance use behaviors, including insight-oriented persuasion, punishment, enlightenment,

knowledge-focused education, and confrontation. There is a strong evidence base for brief interventions (BI), motivational interviewing (MI), and motivational incentives or contingency management (CM) that target the motivational component of SUDs. The main goal of the brief interventions is to activate one’s own self-regulatory processes.⁴⁹ They do not use education, confrontation, or teaching of specific skills. BIs can be implemented in diverse clinical settings, can be used as a single or initial session, or can be embedded within a particular treatment modality over a few sessions. In several studies, BIs have been shown to be as effective as more intensive approaches.⁵⁰ The counseling style of MI shares many of the attributes of BIs and its adaptation in motivational enhancement therapy. Randomized clinical trials with a wide range of populations and problems have supported the efficacy of the MI therapeutic approach, defined as a person-centered collaborative form of guiding the person to elicit and strengthen motivation for change.⁵¹ MI has been conceptualized as having two major components: relational and technical.⁵² The relational component focuses on the therapeutic alliance and accurate empathy, and the technical component focuses on evoking change talk and commitment language. MI has shown synergistic effectiveness when combined with other active treatments and used as a prelude to other interventions.⁵³ CM uses strategies to facilitate rapid and self-driven behavior to stop alcohol or drug use, and help the person engage and continue in treatment. Based on principles of operant conditioning, CM acknowledges that many psychoactive substances are reinforcers, and that reinforcement of abstinence and other related behaviors can facilitate the recovery process. There is robust evidence for the efficacy of CM interventions. Using CM as an approach to help people with SUDs stay in treatment and increase abstinence has very important public health implications related to treatment effectiveness, particularly for patients with CODs.⁵⁴⁻⁵⁶

Behavioral interventions also include cognitive behavioral therapy, family, and social networks modalities. Behavioral interventions have been shown to be effective across the major classes of misused substances. This is relevant considering that polydrug use is an expectation, not an exception. Outcomes of behavioral interventions are generally better for individuals who have less severe forms of SUDs, supportive families and CSOs, fewer medical problems, and less involvement with the criminal justice system. Behavioral therapies improve impulse control and also have the potential to reduce craving. The most common model of relapse prevention (RP) is the cognitive behavioral model of Marlatt and colleagues that has been used with all types of SUDs: in individual, conjoint, and group sessions and with clinical populations, such as individuals with CODs.^{57,58} Literature reviews, meta-analyses, and results of multiple studies showed that RP is effective in reducing relapse rates and improving substance use outcomes. Interventions that facilitate meaningful involvement of people with SUDs in social networks that encourage abstinence, such as mutual support programs (MSPs), have also been shown to be effective. Components of couple and

family therapy that have been demonstrated to be effective include contingency contracting, relationship enhancement approaches, and improving communication skills. Behavioral couple therapy also has shown significant reductions in drinking and drug use compared to individually oriented therapy.⁵⁹ Community Reinforcement and Family Training (CRAFT) is a therapeutic approach that teaches family members or CSOs particular skills to influence their loved one's drug use behaviors.⁶⁰ By learning how to provide positive reinforcement for abstinence and avoid inadvertently reinforcing addictive behaviors, family members or CSOs can have a positive impact and facilitate the recovery process. Engaging the loved one in treatment is another benefit of the CRAFT approach. As with MI and other behavioral therapies, CRAFT is not easily learned simply by reading about it and attending a few workshops. It requires training, practice, and supervision to gain competence in utilizing it. Another approach that incorporates many elements of empirically-supported treatments is the community reinforcement approach, which has a strong evidence base by itself. Unfortunately, our current systems of care still struggle to adopt a large number of evidence-based therapies and to deliver them effectively. One approach to disseminating these therapies would be to focus on training staff in core behavioral skills and provide them with regular feedback and ongoing supervision to ensure the fidelity of the delivery of these empirically validated skills. MSPs are not considered therapy or treatment. Many people with SUDs rely on MSPs without ever seeking professional treatment. Arguably, the most well-known MSP is AA. Involvement in the 12-step program of AA is consistently correlated with improvements in drinking outcome.^{61,62} Encouraging people with SUDs to participate and "work" the steps of AA and other 12-step programs is effective.⁶¹ The 12-step facilitation treatment approach (TSF), delivered by a counselor and designed to help a patient to be more involved in AA, has been found to be as effective as other evidence-based modalities, such as motivational enhancement therapy and cognitive behavioral therapy.⁶³

Pharmacotherapies for SUDs have been used to target acute withdrawal or initial attainment of abstinence and prevent relapse. The Food and Drug Administration (FDA) has approved a broad range of medications for the treatment of tobacco, opioid, and alcohol use disorders; however, these therapeutic options are not effective for all patients. The current opioid crisis has sparked urgency for greater collaboration between industry and the National Institute on Drug Abuse (NIDA) in medication development.⁶⁴ For example, more medication options are currently available to treat opioid use disorders, such as a buprenorphine/naloxone combination (available as Suboxone, Zubsolv, Bunavail, and generic), a one-month extended release buprenorphine (Sublocade), a one-month extended release naltrexone (Vivitrol), and a six-month buprenorphine subdermal implant (Probuphine). In addition to retaining people in treatment and decreasing substance use, these treatments may also serve as harm reduction, such as reducing opioid overdoses.⁶⁵

Pharmacotherapies in SUDs face significant obstacles in their adoption. For example, primary care physicians might not see implementing buprenorphine treatment into their practices as economically and/or professionally rewarding. They may not be interested in working with people with opioid use disorders, and may not be well trained in screening for and managing SUDs in general, and opioid use disorders in particular. They may not be interested or feel they have enough time to obtain the waiver to be qualified to prescribe it, or simply they do not want to have their practices inundated by "junkies." The bottom line is that getting practitioners to adopt an innovative treatment approach with significant benefits is a very challenging process. Behavioral interventions can potentially increase adherence and retention in treatment (e.g., medication adherence interventions, MI, and CM). However, the combination of a particular behavioral intervention and a specific pharmacotherapy does not always produce positive outcomes over that seen with either approach alone. The intensity and nature of the behavioral intervention depends on the patient's characteristics and the clinical setting in which the treatment is provided. Pharmacotherapies in combination with behavioral interventions can be effective and safe in treating CODs in adults and youth.^{54,66,67}

Early studies related to inpatient alcoholism treatment clearly demonstrated that the outcomes of inpatient treatment programs were on average the same as those from less costly outpatient treatment options.^{68,69} Matching patients to treatment has received attention from treatment researchers who are trying to predict the best response to different treatment approaches. In fact, there is limited research evidence to suggest that a particular setting, modality, intensity, or form of treatment is significantly better for any specific type of patient. There is much more empirical support for the approach of addressing the patients' needs beyond drug and alcohol use. Patients will be more successful in their recovery if their other needs are addressed concomitantly with their substance use problems.⁷⁰ The intervention could be just a referral to the services they need and connecting them with those services. Case management services that help to link patients with needed services such as housing, economic and legal assistance facilitate the process of recovery. The point is to match treatment to people's needs, encourage them to identify their own values and goals, brainstorm a menu of treatment options, and let them make informed choices.

Evidence-based prevention programs, both universal and selectively targeted to high-risk individuals, have shown positive outcomes in reducing drug initiation and arresting its development. Since prevention interventions address risk and protective factors that are common to a wide range of behavioral problems, they lead to positive outcomes not just in drug use behaviors but also in reducing impulsivity, driving while intoxicated, and improving overall mental health. Addressing behavioral and emotional problems in youth as soon as they develop could potentially prevent subsequent substance use problems.

Confining addiction prevention and treatment in isolated programs has significantly contributed to stigma and lack of engagement in treatment. The integration of screening, prevention, and intervention for SUDs within mainstream health and social services is highly recommended. Advocating for the involvement of health and social institutions, including the criminal justice system, schools and colleges, and religious communities, is warranted given the devastating impact of SUDs on public health and welfare.

As a closing piece of advice, the purposes of adopting evidence-based treatments are to improve current practices, build more effective systems of care, and ultimately improve outcomes for our patients and their families. Exercising humility and caution is fundamental and appropriate in generalizing findings from clinical trials to community practice.⁷¹

Training Model of Motivational Interviewing (MI)

In this section, I (AD) will review a training model of MI that I have implemented with medical students, psychiatry residents, and clinical psychology interns on the “dual diagnosis” unit at Western Psychiatric Institute and Clinic of UPMC. The duration of the training experience ranges from five weeks to three months for each trainee.

It's a simple approach. The necessary ingredients for high-quality training include: instruction, practice, feedback and in vivo coaching, and modeling. I will elaborate on all these components and incorporate experiences shared by trainees.

Why Train in MI?

1. It is an evidence-based approach and focuses on a patient's motivation, commitment, and planning for behavioral change, and it works for a wide variety of behaviors, including substance use
2. Simple enough so that trainees can gain competence in using MI with four weeks of intensive training
3. Complicated enough that one can put in a lifetime of work perfecting the use of the approach
4. Patients feel respected, heard, and more willing to make lifelong changes
5. Brief motivational interventions can have a major impact on behavior change
6. MI can be used as a clinical style, a freestanding therapeutic approach, and/or integrated with any other treatment modalities

It is important for beginning trainees and practitioners to learn one therapeutic approach well to start off. Trainees and practitioners who can learn to competently provide one approach to therapy can begin to see their interventions as either adherent or nonadherent to the

therapeutic model. And when they notice they have deviated from the treatment frame of the model, they can figure out why they did it and whether it was helpful or unhelpful (e.g., if they are providing nondirective therapy and they become highly directive; if the expectation with the patient is that they will fill out a diary card for each session, and they don't mention it when the patients don't). The adherence to treatment models (i.e., fidelity) also lets them know when the patient deviates from the treatment frame and cues them to investigate these deviations.

First, **instruction** is fluid. It involves book learning and watching a one-hour presentation I give on an overview of MI. No formal workshops were incorporated into the MI training on the unit. The expectations are to read the 3rd edition of *Motivational Interviewing: Helping People Change*,⁵¹ *Motivational Interviewing: A Guide for Medical Trainees*,⁷² and other papers on MI and brief interventions. Trainees listen, read, and get an intellectual sense of what MI is about. Trainees also teach each other about basic elements of MI. I provide instruction on topics as they become relevant during clinical rounds with the whole team. Instruction and knowledge alone are not enough and do not change practice. People may think they learn to deliver treatment from instruction, but they don't.

Practice involves the use and repetition of skill. People may practice different skills without greatly improving them. They can practice mindlessly or mindfully. Deliberate practice feels effortful. It requires focus and attunement to rough areas and striving toward improvement. Deliberate practice is by definition practicing something that is beyond our current ability. Repetition is focused on breaking down skills (i.e., reflective listening, evocative questions) into basic units and improving on each of those chunks, then continually practicing these skills at more challenging levels. Interestingly, it takes about 10,000 hours of deliberate practice to become an expert at anything. Research found that deliberate practice predicts performance well above anything that we'd call innate or genetic talent. A typical research study on deliberate practice in music finds that when we divide musicians into the top third and bottom third of skill level, as rated by their teachers, what divides them more than anything is the amount and quality of daily practice.

The goal of the training model is not to make trainees “experts” in MI but why not structure their practice of MI and other therapeutic skills to be deliberate practice, rather than just repetition?

My take on this is that we practice MI and therapy, but we fail to do the deliberate practice that will actually keep us improving. “Practice in practice” means trainees take their learning, and their feedback, and practice once in clinical rounds with others watching and listening. Later, they practice again on a one-on-one basis to their patients.

Doing therapy in front of a group of trainees who will give each other feedback motivates them toward deliberate practice. They work hard and smart in that session to improve their adherence to MI, but they also are motivated to work on what they have not done well in the session later in their afternoon one-on-one session, given that they want to show an improvement in their skills the next morning during clinical rounds. Trainees have repeatedly expressed fulfillment and increased self-efficacy, and showed major improvements in their skills that they attributed to intensive deliberate practice.

- *“Real learning occurs when you extend past your limit and make mistakes, right?” — MZ*
- *“The biggest effect was that it really made me want to up my game... I think having people watching caused me to develop more internal awareness of everything I was saying/doing and how it was impacting my patient. It was initially tough to have that going on while also trying to do therapy. Over time, that process became more automatic, and I think it’s that process that really helps me to be able to continue to use MI now that I’m not getting feedback every day.” — SR*

Trainees and most practitioners tend to be inaccurate at assessing their own performance. They tend to think they’re doing better than they are. Living without feedback helps people keep this delusional thinking. **Feedback** and **in vivo coaching** post-session during clinical rounds after in vivo coaching is an assessment of trainees’ work with a focus on how they can improve it and where their challenges are. Feedback provides them with a map for their deliberate practice. The best feedback, as reported by trainees, provides examples of what to work on, how to work on it, and how it might look when you’re finished. Feedback has been shown to be vital for MI training. There is strong research evidence showing that instruction with feedback, coaching, or both raises trainees’ performance to competence in MI, whereas instruction alone tends not to raise performance. Individuals who had only completed the instructional part thought they improved a great deal, and in fact were less likely to want to engage in more training because they felt they had already learned MI, even though they really had not. This is an important caution — if trainees don’t put themselves out there for feedback, they can think they have something mastered that they are actually incompetent in doing! Developing elite performance related to feedback and deliberate practice is known as a growth mindset, a construct developed by Carol Dweck.⁷³ Real and honest feedback, as well as other elements of training, fosters a growth mindset. Trainees shared with me that when they first joined the team, it felt like a “culture shock,” and they took a hit to their self-esteem. The feedback the trainees receive from me and their peers is delivered in a straightforward manner, using the MI spirit with specifics about MI-adherent and nonadherent practices and how/what can be improved. Over time, trainees develop a sense of working with coaching from the team to improve their skills, and that doing this well simply requires hard and smart work, careful consideration of what others are saying, and thorough dedicated practice to improve their MI skills.

“If we create a culture of showing our work and soliciting constructive feedback, we are acknowledging that looking at our flaws and errors is important to getting better. This is how we do a better job, and this is how we can do better for our clients.” This is a perspective expressed by a clinical psychology intern.

The benefits of a growth mindset include⁷³:

- Challenge is fun rather than terrifying (if you have to show yourself and everyone your intelligence, challenges are a threat)
- People with a growth mindset tend to be better at identifying their strengths and weaknesses, whereas those with a fixed mindset tend to overestimate their abilities
- You can, and must, make mistakes rather than needing to be perfect
- People with a growth mindset feel smart when faced with challenge, while those with a fixed mindset feel stressed and stupid
- Those with a fixed mindset tend to have a more fragile self-esteem and are at higher risk for depression
- Randomly assigning people to a fixed or growth mindset condition in a computer training course, researchers found that those with fixed mindset lost confidence in their computer skills, while those in the growth mindset condition gained confidence

“I quickly became accustomed to receiving feedback and in vivo coaching as well as offering it, though both were uncomfortable at first. Through this constructive environment, we pushed each other to excel, take risks, and be honest about our perceived struggles/successes. It was so much fun to watch each other’s MI skills progress.” — ES

The development of the growth mindset is exactly what ES describes. She says that at first it was hard to accept this feedback and difficult to be accustomed to that, but that with time, it became more comfortable. This use of struggles/successes is a perfect description of the growth mindset — if you struggle, you succeed.

“The feedback during my six weeks of training was an essential part of learning MI and embracing its spirit. We had a supportive and keen team, and pushed each other to work hard and do our best every day...A key concept that AD really helped me grasp was how to mobilize the process of change once the patient is expressing change talk and commitment language. An incredibly effective strategy was to “go deeper” with my reflections (e.g., to take more risks with my hypotheses of the underlying meaning of a patient’s words). This set the stage for using more powerful, evocative questions, and many of my patients really embraced exploring their internal worlds and external interactions.” — ES

"Getting feedback right after doing a session was tremendously helpful. AD, and the other trainees, often commented on how my particular language or intervention affected a patient's body language, tone of voice, or overall engagement in the session. These things were hard for me to notice when I was doing a session, or were hard to remember after the fact. That feedback showed me how the MI approach affected my patient and also taught me what to pay attention to in my future sessions." — SR

Something that I find incredibly helpful in training in MI is **modeling**. I ask trainees to watch me engage the patient in a session right after they finish their session. As described by one of the trainees, "This setup is ideal, because we can really delude ourselves and think that it's the patient's fault if we didn't have a good session — they don't want to engage, etc. Then AD comes in and the patient starts engaging, starts giving change talk, and starts moving in a great direction. There is nothing more humbling and instructive."

Put simply, modeling shows what therapeutic work can look like. It takes a while to begin to approximate that model. Trainees are encouraged to learn MI through modeling without losing the identity of their clinical style.

"Watching AD's sessions was a fundamental part of how I learned MI. In some of his sessions, I felt like I was in a concert hall, watching a conductor fervently evoke music from the orchestra...I also took in a lot through observation of body language and tone. In many interviews, I would write down what I felt were particularly effective/evocative phrasings and review them later. I think one of the benefits of having an MI mentor is that like any apprenticeship, you observe their skills and techniques and incorporate/deliver these through your own personal style." — ES

As articulated by one of the trainees: "We need to develop an atmosphere of continual improvement — where we are going with best practices rather than status quo. We're trying solutions that are on the cutting edge of research. I think the most important things we should challenge ourselves to do are to truly challenge ourselves and those around us to have the utmost respect for our patients, to drop judgments and build our accurate empathy skills, and to truly listen and understand where someone is and allow ourselves to be hopeful of where they can go. Motivational interviewing is particularly well suited as a framework for this type of work."

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