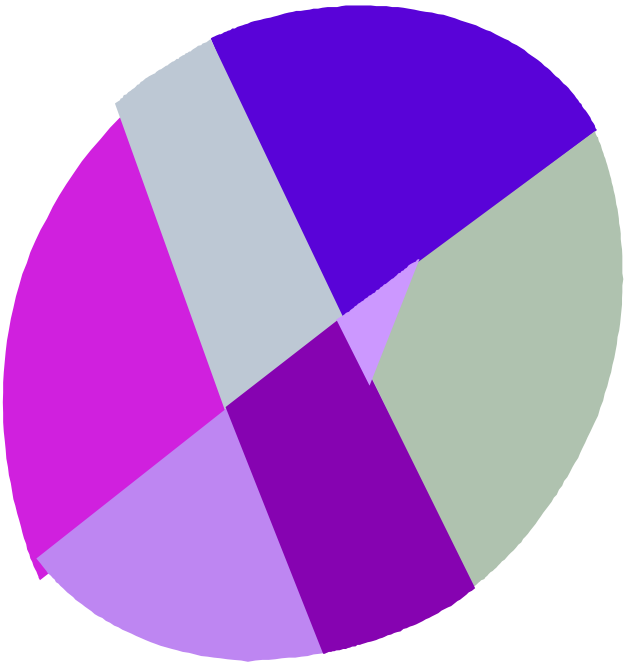
Evidence-Based Practices:



An Implementation Guide for Community-Based Substance Abuse Treatment Agencies

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The Iowa Practice Improvement Collaborative (PIC) Project is administered by the Iowa Consortium for Substance Abuse Research and Evaluation at the University of Iowa.

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Evidence-Based Practices:
An Implementation Guide for Community-Based Substance Abuse Treatment Agencies

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Introduction

In these times of ever shrinking resources, it is more important than ever that we provide the most time and cost-effective treatment available to the field. The substance abuse treatment field, like other practice disciplines, has long been characterized by inconsistent, idiosyncratic practices based on one's personal experiences, intuition, particular styles of communicating, and / or folklore. The gap between the treatment approaches or practices that research has shown to be efficacious and what is actually done in substance abuse treatment agencies is enormous. Documents such as the Institute of Medicine report on "Bridging the gap between practice and research" (Lamb et al., 1998) and the National Treatment Plan (CSAT, 2000) call for connecting practice to research. One scientist estimated that 19% of medical practice was based on science and the rest on "soft-science" or opinions, clinical experience, or "tradition." It is likely that even less of substance abuse practice is based on science, given the state of the art of substance abuse research and practice. This handbook suggests some concrete ways of bridging the gap between research findings and clinical practice by providing guidance on identifying, implementing, and maintaining evidence-based practices.

The first section defines evidence-based practice and suggests a set of criteria for evaluating existing and new treatment methods or approaches. The second section provides a brief review of the literature on evidence-based practices or principles, including clinical practice guidelines. The third section focuses on adoption strategies. Once an evidence-based practice has been selected, what are the steps needed to ensure that agencies and individual staff adopt and implement the practice? The fourth section outlines two kinds of outcome measures: evaluation of the effectiveness of the treatment approach (the evidence-based practice) and measurement of fidelity (whether staff use the approach as they were trained to use it). Finally, we provide some further resources for those who are interested in more extended discussions of evidence-based practice and adoption of innovations.

Because treatment effectiveness research is still in an infancy stage, this handbook does not provide a cookbook of evidence-based practices. The knowledge base in the field is constantly evolving and different agencies have different treatment needs. It is highly unlikely that there will ever be one best way to treat substance abuse in all clients. This handbook provides a framework for selecting practices or approaches that have some degree of research evidence and that fit the needs of an agency. It also provides suggestions for introducing new practices to an agency and measuring their effectiveness.

Definitions/Criteria for Evidence-Based Practice

Although "evidence-based practice" has become a buzz word in the last few years, there is still no consensus on what exactly constitutes an evidence-based practice. What kind of evidence is needed, how much evidence? A practice can have excellent research qualities—it can be extensively tested with randomized clinical trials, have a detailed treatment manual, and perform well with a variety of clients in controlled research studies—but still not meet practical considerations that determine its applicability to the field. For example, if it is costly to train staff, if the manuals are expensive, or if insurance or other forms of payment do not cover the treatment, the practice is useless in the field. The Center for Substance Abuse Treatment has been concerned with this gap between research and practice and instituted two major programs to bridge the gap. The **Addiction Technology Transfer Centers** are charged with the dissemination of evidence-based practices to the field in forms that are tailored to different disciplines or settings. The **Practice Improvement Collaborative** network was developed to address the adoption of evidence-based practices in the field: What are the factors that facilitate or hinder the adoption of evidence-based practices? ATTCs and PICs have a shared goal of infusing the field with evidence-based practices, but focus on different aspects of the process. This handbook is a project of the Iowa PIC, a statewide collaboration of substance abuse treatment providers, researchers, policy-makers, and consumers.

The Iowa PIC Criteria

The Iowa PIC was asked by the Single State Agency director to develop a plan for ensuring that community based treatment agencies use evidence-based practices. The goal was to eventually tie funding to demonstration of evidence-based practice. The first step in this project was to develop a set of criteria to evaluate new and existing practices. These criteria combine demonstration of research evidence with practical considerations. Each of the criteria is outlined below along with a rationale for its inclusion and its limitations as a criterion measure. These criteria are an attempt to operationalize evidence-based practice for our state.

<u>The Iowa PIC Criteria</u>

1. At least one randomized clinical trial has shown this practice to be effective.

Rationale: Clinical trials are considered the best research method to test new or existing practices. They are scientifically rigorous. In a randomized clinical trial, each research participant has an equal chance of being assigned to the experimental treatment. However, there are often strict inclusion and exclusion criteria to qualify for a clinical trial.

Limitations: Clinical trials often do not mimic real life. They may exclude the very type of clients that make up most of the treatment population (such as clients with co-occurring disorders or criminal justice involvement), they often pay clients to participate, they have extensive ongoing staff training and supervision, they have detailed treatment manuals, and they are conducted in larger agencies with research experience. Clinical trials are designed to test treatment efficacy—does the treatment work under ideal circumstances—and usually do not attend to practicality issues (treatment effectiveness).

2. The practice has demonstrated effectiveness in several replicated research studies using different samples, at least one of which is comparable to the treatment population of our region or agency.

Rationale: The practice has been proven useful for several different kinds of clients—most agencies cannot afford to offer multiple treatment options, so they need approaches with wide applicability.

Limitations: It may be difficult to find studies with similar samples. In Iowa, most treatment agencies treat rural clients with methamphetamine problems—are they comparable to urban cocaine users or even urban meth users?

3. The practice either targets behaviors or shows good effect on behaviors that are generally accepted outcomes.

Rationale: If the practice does not target the outcome measures you collect, it will not appear to be effective even if clients improve in other ways. If abstinence is the major outcome measure for your agency, as it is in many places, the practice must increase abstinence rates.

Limitations: Substance abuse is a chronic relapsing disorder, so outcomes should be as broad as possible. No practice will "cure" substance abuse. However, outcome measures are often politically motivated so are not always consistent with research.

4. The practice can logistically be applied in our region, in rural and low population density areas.

Rationale: Some practices are highly specific, such as methadone maintenance for heroin addicts. There may be an insufficient number of heroin addicts in a rural community to sustain the program. Staff must be able to deal with all clients who come in the door.

Limitations: Few treatment effectiveness studies have been conducted in rural or frontier communities, so it may be difficult to find appropriate practices. In rural areas, treatment providers are usually generalists because specialization is not feasible.

5. The practice is feasible: It can be used in group format, is attractive to third party payers, is of low cost, and training is available.

Rationale: Practices with good research support will not be implemented if they do not meet practical considerations.

Limitations: If too much weight is put on the practical aspects, the scientific merit may be downplayed and we will continue to use practices that are not the best available, just because they are inexpensive and easy to administer. Creative ways to finance training or purchase new materials must be sought.

6. The practice is manualized or sufficiently operationalized for staff use. Its key components are clearly laid out.

Rationale: An evidence-based practice must contain enough detail so that all staff can use the practice in the same way. Treatment manuals enhance fidelity. If staff are not consistent in their use of a practice, the practice cannot be accurately evaluated.

Limitations: Treatment manuals by nature are rigid and highly specific and may inhibit counselor creativity or use of intuition. In addition, they may not lend themselves well to a particular setting. For example, a DUI program manual has ten one-hour sessions. Violators in your region are mandated to attend eight hours of treatment—what 2 hours do you cut out?

7. The practice is well accepted by providers and clients.

Rationale: Buy-in by staff and treatment motivation of clients are enhanced when they accept the practice.

Limitations: Acceptability can be derived from folklore, dogmatic beliefs, or other factors totally unrelated to the effectiveness of a practice. Providers and clients alike tend to prefer the old familiar practices and are resistant to change. Focusing too much on acceptability maintains the status quo.

8. The practice is based on a clear and well-articulated theory.

Rationale: Theory-driven practice is preferred to eclectic, atheoretical approaches because theories are testable. The scientific method begins with generating hypotheses from theories.

Limitations: Treatment effectiveness may be related to highly specific behaviors or skills within a theory. That is, the theory may lack validity, but some of its components may

work. Substance abuse is a complex biopsychosocial phenomenon that may defy the development of any unified grand theory.

9. The practice has associated methods of ensuring fidelity.

Rationale: Fidelity (consistency of delivery of the treatment over time) is a key component in evaluating the effectiveness of a treatment. If staff alter a practice in ways that have not been studied empirically, the practice is no longer evidence-based.

Limitations: Research on fidelity is even newer than treatment effectiveness research. There are few well-established methods of measuring fidelity. The best methods (e.g. direct observation by a third party) may be cost prohibitive whereas the least expensive methods (self-report measures like checklists) may not be very accurate.

10. The practice can be evaluated.

Rationale: Evaluation, or the measurement of behavioral outcomes (staff and client) is an essential part of research on treatment effectiveness. It is also a form of accountability to a funding source or a community.

Limitations: The outcomes must match the treatment objectives. For example, if job training is a major part of the treatment approach because unemployment is a major relapse risk factor, then change in employment status must be one of the outcome measures. Another issue is related to the timing of the evaluation. If outcome measures are collected at the time of treatment completion, the results are much different than if outcome measures are collected six months after treatment completion. Each agency/region must determine when to evaluate as well as how to evaluate. When evaluating implementation of an evidence-based practice, measuring staff outcomes may be as important as measuring client outcomes. See the section on evaluation for some guidelines in developing an evaluation plan.

11. The practice shows good retention rates for clients.

Rationale: High dropout rates adversely affect outcomes and are costly.

Limitations: If a practice requires a very high level of cognitive functioning, or benefits only a specific segment of the population, dropout rates may be high. Good screening procedures may be needed to identify the clients that will really benefit from the practice. Just throwing all clients into the same pot may be the problem rather than the practice itself. Alternatively, staff attitudes may be a problem. If staff have not committed to the practice, they may send mixed messages to clients who in turn become suspicious of the practice.

12. The practice addresses cultural diversity and different populations.

Rationale: Agencies often cannot afford to offer many highly specific approaches. They need practices with wide applicability, or that have modifications/adaptations for different populations.

Limitations: Clients are extremely diverse and it may be difficult to find practices that are appropriate for all. For example, adolescents and elderly clients have very different needs. Should agencies specialize in different kinds of clients? This may not be feasible in rural areas. Small generic agencies need practices that can be widely used.

13. The practice can be used by staff with a wide diversity of backgrounds and training.

Rationale: Substance abuse counselors range from people with no higher education at all to people with PhDs or MDs (rarely). They also vary widely in the type and amount of training they have received, and whether they are in recovery. Although counselor competencies have been identified (CSAT's TAP 21) they are not consistently applied to the field.

Limitations: Some of the best practices require a great deal of training, and therefore, will rarely be adopted. Professionalization of the field may be necessary before more complex treatment approaches will be consistently used in the field. A certain level of formal education with coursework on basic counseling competencies as well as specific evidence-based practices is needed.

As the reader can see, there are problems with each of our criteria and they are not clear-cut and precise. Individual states or regions may want to modify these criteria for their own use. It is important that the criteria address all the major concerns of a particular agency or region, or they are only an intellectual exercise. In the next section, we offer some questions that you can raise when developing your own criteria or deciding whether to adopt all or some of ours.

Suggestions for Developing Criteria

The first question to ask is, "*Who needs to be involved in the process?*" The number and type of people that you bring to the table to discuss the criteria will be key to your success in identifying good criteria and developing a process for implementing evidence-based practices. The Iowa PIC established a committee consisting of substance abuse providers, policy-makers, and researchers to develop the draft criteria, and then criteria were reviewed by the statewide substance abuse program directors association. In your region, you may want to establish an ongoing committee or task force that reviews new

procedures. Make sure that you have a few people with research expertise who will be able to evaluate the rigor of the research studies, and a few people who thoroughly understand the practice arena and can advise you on the practical limitations. You may want to select the people whose buy-in is critical for the process to work.

Next, you will have to determine what authority this committee will have—will they advise some decision-making body or have authority to select and enforce use of practices? There are different challenges if the decisions are top-down (some higher authority sets the criteria and selects the practices), bottom-up (line-staff set the criteria and identify practices), or interdisciplinary (people from different disciplines and different levels in the hierarchy cooperate on the process).

Once the committee has been formed, here are a few points to consider:

1. Who are your clients? If you have an adolescent treatment program, where clients mostly have problems with alcohol, marijuana, or club drugs, you can narrow your review of approaches.

2. What is currently being done? Do you have any needs assessment data on the practices that are being used?

3. How much evidence is needed? If your goal is to identify one or two of the most highly researched practices, you may require rigorous evidence. However, if you wish to identify a broad range of practices with some research evidence to support them, you will use looser criteria. The more evidence you require, the more you will restrict your list of acceptable practices.

4. Does the practice need to be manualized? Again, if this is your criterion, you will limit the number of acceptable practices. On the other hand, if the practice is not manualized, someone at your agency will have to do a lot of work to make it applicable to your setting (this may be a good thing because you can adapt to your specific needs—but remember that if you do too much adaptation, it is no longer an evidence-based practice).

5. Does a practice have to meet all of the criteria to be accepted? Will you have some kind of weighting system or score, or a set of required criteria and some that are optional? If you want more flexibility, you may want to consider clinical practice guidelines rather than evidence-based practices.

6. How much weight do you want to give to practical considerations relative to scientific merit? Is one more important than the other? In reality, the cost, availability, and acceptability to staff and clients may be of equal concern to scientific merit.

7. Plan to examine outcome measures or indicators as part of the process of evaluating and adopting new practices. Different practices may require different forms of screening, assessment, and outcome evaluation. Build this discussion in to the committee / task force from the beginning.

8. Consider fidelity from the beginning. A practice may be practical and supported by research, but if it is difficult or too costly to measure its fidelity, it will have less value.

Review of the Literature on Evidence-Based Practices

The Institute of Medicine report (Lamb et al, 1998) stimulated a much more focused debate on the gap between research and practice than had previously existed. The report deplored the billions of dollars spent on substance abuse research that is largely ignored or unknown in the field. However, the report did not put the blame on practitioners who willfully ignore research findings, but instead provided a discussion of the barriers to adoption of research findings. The problems are complex, and researchers, providers, and policy-makers have all contributed to a lack of communication in the field. Researchers have sometimes developed esoteric practices/procedures that are not practical to use in the field. Policy-makers have sometimes set requirements for treatment agencies based on public opinion rather than research. And providers often do not have the skills or the time to translate research findings into practice. In addition, the stigma of substance abuse has led to negative attitudes of the general population, resulting in limited funding for treatment. The competition for limited resources has been a major concern in the substance abuse field.

Research-Practice Gaps

Table 1 demonstrates just a few of the gaps between research and practice that need to be addressed in order for substance abuse treatment to be more effective.

Table 1. Some examples of research-practice gaps.

Research shows that:	**In practice:**
Pharmacological interventions (e.g., naltrexone, buprenorphine, methadone maintenance) are effective in reducing alcohol, tobacco, and opiate craving and reduce the negative consequences of substance abuse on the individual and communities, in terms of health care costs, law enforcement, and unemployment (e.g., APA Practice Guidelines; Meyer et al., 1979; O'Brien et al., 2002; O'Conner et al, 1998).	Medications are rarely used because: 1. cost (insurance may not cover it and most substance abusers cannot afford it). 2. lack of training/education about pharmacotherapies. 3. negative attitudes about using medications to treat addictions. 4. negative attitudes about practices that may be perceived as "harm reduction" rather than abstinence-based. 5. substance abuse agencies may not have access to a health care provider with prescriptive authority.

Treatment effects are generally not seen until about 90 days into treatment—thus, treatment must be longer than that. In fact, shorter treatments are quite ineffective (e.g., Finney & Moos, 2002).	Most residential treatments are 21 days or less in length because of: 1. cost (insurance limits the days of treatment or number of sessions). 2. lack of parity of physical and mental health care payments. 3. treatment of substance abuse as an acute rather than chronic disorder.
Treatment works best when group therapy is supplemented with individual therapy (NIDA, 1999).	Most substance abuse treatment is done almost entirely in groups due to cost considerations and lack of adequately trained staff.
Treatment needs to address the whole person because addiction is a biopsychosocial phenomenon.	Most addiction treatments focus on substance abuse only because of the: 1. cost of holistic treatment. 2. lack of training of counselors.
Addiction is a chronic, relapsing disorder, much like diabetes or hypertension. It cannot be cured, but can be managed effectively with long-term, on-going support. Periodic relapse is to be expected (McLellan et al, 2000).	Addiction is treated like an acute disorder with short-term intervention in times of crisis. Relapse is seen as a failure of treatment. Abstinence is often used as the only measure of treatment success.
Randomized clinical trials have shown that several treatment approaches are effective: 12 step, cognitive behavioral, contingency management, motivational enhancement, therapeutic communities, etc. (Hubbard et al, 1989; Simpson & Brown, 1999).	Clinical trials are usually administered in individual format, not group, and many of the types of clients served in community treatment programs are excluded from the clinical trials. Thus, there is little evidence that these approaches work in the field (e.g., Carroll et al, 1999). There is little research on the state of the art of substance abuse treatment—clinical trials compare some treatment approaches to "treatment as usual" but there is no consistent definition of treatment as usual.
The prevention literature (and HIV prevention research in particular) shows that practices must be culturally specific to be effective (CSAT, 1999).	Most treatment is generic—all clients get the same treatment.

Clinical Practice Guidelines versus Evidence-Based Practices

Many disciplines, including the substance abuse field, have developed clinical practice guidelines as a means of making treatment more consistent from one agency to another or from one provider to another. Clinical practice guidelines are based on current research findings or on consensus panels of experts in the field. They are intended to help clinicians make better decisions about treatment. Some guidelines are specific to assessment or to specific situations, such as treating the HIV positive client. The purpose of clinical guidelines is the same as the purpose for evidence-based practices—to translate research into practice, increase the effectiveness of treatment, provide a framework for collecting data about treatment, ensure accountability to funding sources, and to encourage some consistency in practice. One difference between clinical practice guidelines and evidence-based practices is that practice guidelines are not based on a single theoretical framework. Rather, practice guidelines are drawn from a wide variety of research literature, representing an eclectic collection of "things that work." Evidence-based practices are generally based on one theoretical approach and provide detailed descriptions of how to carry out the approach.

The National Institute on Drug Abuse's *Principles of Effective Drug Treatment* (1999) is an example of clinical practice guidelines. This document outlines 13 principles of drug addiction treatment based on NIDA-funded research. They include broad concepts rather than specific procedures or techniques. The principles are:

1. No single treatment is appropriate for all individuals.
2. Treatment needs to be readily available.
3. Effective treatment attends to multiple needs of the individual, not just his or her drug use.
4. An individual's treatment and services plan must be assessed continually and modified as necessary to ensure that the plan meets the person's changing needs.
5. Remaining in treatment for an adequate period of time is critical for treatment effectiveness (a minimum of 3 months for most clients).
6. Counseling (individual and group) and other behavioral therapies are critical components of effective treatment for addiction.
7. Medications are an important element of treatment for many patients, especially when combined with counseling and other behavioral therapies.
8. Addicted or drug-abusing individuals with co-existing mental disorders should have both disorders treated in an integrated way.
9. Medical detoxification is only the first stage of addiction treatment and by itself, does little to change long-term drug use.
10. Treatment does not need to be voluntary to be effective.
11. Possible drug use during treatment must be monitored continuously.

12. Treatment programs should provide assessment for HIV / AIDS, Hepatitis B and C, tuberculosis, and other infectious diseases, and counseling to help patients modify or change behaviors that place themselves or others at risk of infection.
13. Recovery from drug addiction can be a long-term process and frequently requires multiple episodes of treatment.

Other practice guidelines come from professional organizations such as the American Society of Addiction Medicine (ASAM) which produces the patient placement criteria that are widely used in the substance abuse field. ASAM also has clinical practice guidelines for pharmacological management of addictions.

Clinical practice guidelines generally allow great freedom in the actual implementation of the practice. For example, the NIDA guideline states that treatment needs to be readily available but does not specify how to accomplish that. Some regions may set up treatment in schools or shopping malls; others may place treatment on job sites, in senior centers, or primary care settings.

Evidence-based practices, on the other hand, are often developed in the form of clinical practice manuals that are quite specific. They generally specify the length of treatment and the specific topics and approaches to be used. Most evidence-based practices are based on a specific theoretical approach, such as motivational enhancement, contingency management, or cognitive behavioral methods. NIDA's clinical practice manuals and the Project Match manuals are examples of clinical treatment manuals. At the time of this writing, there were three Project Match manuals (12 step, Cognitive Behavioral, and Motivational Enhancement). NIDA also had three treatment manuals for cocaine addiction: (Cognitive Behavioral Treatment, Community Reinforcement plus Vouchers, and Individual Drug Counseling). The Center for Substance Abuse Treatment had manuals for treatment of adolescent marijuana users.

Warning: Just because a treatment approach comes in a detailed manual format does not make it an evidence-based practice. Many manuals are written based only on the author's clinical experience, and there is no empirical research to support their use. Evidence-based practices come with a plethora of information about the research that went into their development and the client populations on which the practice was tested.

Adoption and Implementation of Evidence-Based Practices

"Build it and they will come" may have worked in the movies, but in real life, many factors influence adoption and implementation of a new practice. Backer (1993) suggested that for a new approach to be implemented, first it must have evidence to support its use. Then it must be put into a form for dissemination, agencies must be made aware of the approach, the agency must have resources to implement it, and interventions must be developed that encourage and enable agencies to change their current procedures to incorporate the new innovation. Current approaches of disseminating research information are geared toward researchers, such as conference presentations and journal articles. However, merely translating research into manuals or practice guidelines does not ensure implementation. Organizational factors that influence adoption and implementation must be considered. Risk-taking leaders of agencies may be quick to adopt new practices, but line staff with low pay, high burnout and often low education is expected to implement the practice. Both agency directors and line staff must be taken into account in an implementation plan.

Assessment of Readiness to Change

Training is expensive and time-consuming, so it is important to determine if it is feasible to introduce a new treatment approach before launching a training program. Lehman et al. (2002) described an instrument for assessing program director and line staff readiness to change. This instrument is available for free from the Texas Christian University website (www.ibr.tcu.edu). It has two forms—one for leaders of the organization and one for treatment staff. The instrument has 115 items in four scales:

1. Motivational readiness
    a. Perceived program needs for improvement
    b. Training needs
    c. Pressure for change

2. Institutional resources
    a. Office
    b. Staffing
    c. Training resources
    d. Computer access
    e. Electronic communications

3. Staff attributes
    a. Value placed on professional growth
    b. Efficacy (confidence in counseling skills)
    c. Willingness and ability to influence co-workers
    d. Adaptability

4. Organizational Climate
    a. Clarity of mission and goals
    b. Staff cohesiveness
    c. Staff autonomy
    d. Openness of communication
    e. Level of stress
    f. Openness to change

Instituting Organizational Change

Dwayne Simpson (2002) proposed a four factor model of program change, outlined in simplified form in Table 2 below. Once a program has been assessed as ready to change, the process would begin with exposure, or training. Training can be the traditional one-shot workshop approach if the new procedure is a simple technique or is outlined in a highly concrete manual, or it can be on-going and complex if the new innovation entails a major change in philosophy or has complex techniques or procedures. However, as the model indicates, training alone does not ensure adoption. Agencies and individuals must intend to try the approach, actually implement it, and then make its use regular.

Table 2: Simpson's Model of Program Change

Factor	**Description**	**Influences**
Exposure	Training (lectures, self-study, workshops, consultation)	Motivation of leaders and staff: institutional resources (staffing, facilities, training, equipment, convenience of training)
Adoption	Intention to try a new approach	Motivational readiness, group vs. individual decision to adopt, reception and utility of the approach (adequacy of training, ease of use, fit into value system of the individual or agency)
Implementation	Trial use	Support of institution, addition of resources, climate for change, rewards for change
Practice	Sustaining the new practice over time	Staff attributes (self-efficacy, professional growth, adaptability)

Challenges to Implementation

The practical consideration items in the Iowa criteria were developed with adoption and implementation of new practices in mind. If a practice is not acceptable to staff, clients, or the community at large, or it is too expensive, it will not be adopted no matter how effective it might be. However, even practices that meet all of our practicality criteria will present challenges to implementation. The potential barriers to implementation of a new practice are reviewed below. They include training issues, individual variation, buy-in, commitment, negative attitudes about research, lack of research-practice partnerships, lack of resources, and organizational factors.

Training Issues

We have learned that training must be ongoing, not a one-shot, hit and run activity. There are a number of reasons why training must take place over time:

1. Complex learning does not occur in one session—training of new skills must occur over time so that learners can practice the skill in a real life setting and work through any problems with the trainers/experts.

2. Learning must be reinforced frequently. Even the fastest learners tend to lapse back to old practices over time if the new skills are not reinforced.

3. Some new practices require a shift in provider attitudes in addition to learning new skills. Attitude change takes time.

4. There is considerable staff turnover in the field with a continual need to train new staff.

Sorenson and colleagues (1988) found that even when they provided on-site personal consultation about a new approach, 72% of agencies failed to fully implement the program. If they merely provided manuals, 96% failed to implement the program fully.

There is no consensus on the best way to deliver training. In fact, in recent years, experts have realized that our old training models are inadequate to the task of getting research into practice. Recent models focus on "technology transfer," a broader process of moving the field to accept change, incorporate science into practice, and maintain change over time. Technology transfer involves not only training of new skills, but builds in motivation or incentives to change and considers the organizational issues that inhibit or facilitate change.

Training is a major tool of technology transfer. Most staff still prefer face-to-face workshop style training, however cost and time considerations have led to an increase in distance learning technologies. Some suggestions for improving the training of new practices include:

- Develop an extensive training/technology transfer plan early on in your process. As soon as evidence-based practices are identified, consider :
  - how best to institute training.
  - how many people need to be trained.
  - whether trainers are available at low cost in your area.
  - how long the initial training must be.
  - what format the training will take (self-study, videotapes, workshop, etc.).
  - when you will have refresher or reinforcer courses.
  - how you will assess model fidelity.

- Use a variety of learning formats to increase the chance of reaching as many counselors as possible:
  - face-to-face
  - self-study
  - video conferencing
  - CD-ROM
  - Videotapes or audiotapes
  - conference calls

- Train teams rather than individuals—they can support each other when they return to their agencies.

- "Train the trainer" format—select opinion leaders (staff members that are highly influential among their peers) or clinical supervisors and train them on the new practice. They in turn train other members of their staff and supervise the implementation of the new practice. These trainers need back up and support in their agencies.

- Use existing manuals or develop treatment manuals and train staff from the manuals. While knowing the theoretical background of an approach is important, most of the training should focus on direct concrete skills. The more direct the learning, the greater the fidelity will be.

- Make sure that program directors and clinical supervisors have been trained. If only line staff are sent to training, they may not receive adequate support, understanding, or supervision to maintain the new practice.

- Build practice time into the training plan. For example, there may be a week long initial training, followed by three monthly consultations or case conferences to reinforce the learning and discuss any difficulties that arose when staff implemented the practice. Alternatively, the training can be staged with initial training followed by time to practice the skills in real life, followed by more advanced training or reinforcement of the skills.

- Have pre-training requirements, such as requiring participants to view videos, read a book, articles, or manuals, take a survey, do a self-assessment, etc. Theoretically, participants will then come to the training with a baseline of knowledge.

Individual Variation

There are a variety of individual factors that may affect implementation, including client, staff, and agency diversity. First, there are client variations. For example, some clients do not have the cognitive abilities to benefit from cognitive-behavioral or insight-oriented practices. Other clients object to the religious/spiritual basis of some practices. Physically disabled clients may not be able to participate in some kinds of group activities. Client diversity must be considered when selecting practices, and/or contingency plans for how to deal with clients who are unable to engage in the practice must be developed.

There are also variations in provider attitudes and skills. Some staff members may refuse or be unable to learn the skills of one type of practice. Some new innovations fit well with a staff member's existing treatment approach, whereas others present major challenges to the counselor's usual practice. Staff members vary on the value they place on professional growth, the degree of investment in one way of providing treatment, their adaptability, and a host of other factors that may influence whether they adopt the practice or not.

Finally, there are variations in agencies—they vary in physical environment, layout, location, philosophy, access to health care providers or mental health resources, and a host of other variables.

Take these factors into account as you establish your criteria and identify new practices:

- Specify who your clients are before selecting practices and keep their needs in mind while reviewing potential practices.

- Develop policies for implementation—is the new practice mandatory or voluntary? If mandatory, there must be clearly articulated policies for completion of training and use of the practice.

- Will non-counseling staff (receptionists, intake workers, residential technicians) be trained? If the practice involves a philosophical change in the way clients are viewed and treated (e.g., from a denial/confrontational approach to a client-centered model such as motivational interviewing), all staff who have contact with clients should receive some degree of training.

- Will all of your programs use the new practice, or only some of the programs or components of programs?

- Assess the workplace/agency climate: Does the practice match the treatment philosophy? Can it logistically work in this environment? Is there a sufficient number of staff to conduct the treatment program?

Buy-In

In order to effectively implement a new practice, you must get support at all levels—from the funding source, the board of directors, the agency director, clinical supervisors, line-staff, receptionists and other staff, clients, and the community.

- Involve key stakeholders in the process from the beginning.

- Introduce the idea gradually—keep staff informed of the work of the committee.

- Elicit input from staff at major decision points.

- Use opinion leaders—identify key staff or clients who are influential among their peers and train them in the new practice first (Valente, 2002). They will become ambassadors for the new approach.

Commitment

Once a new practice is identified, the funding source and agency directors must make a commitment to the practice. This commitment involves devoting a certain amount of time to the new practice so that it can be implemented and evaluated. It also includes a commitment to training, supervision, and monitoring of the practice. Far too often agencies have enthusiastically adopted a new practice, but abandoned it within months when obstacles were encountered. The temptation to switch approaches is strong—there are many charismatic presenters at conferences or new treatment manuals in the mail. If there is no long-term commitment, do not even attempt the process of implementing an evidence-based practice.

Negative Attitudes/Lack of Knowledge about Research

Many providers and policy-makers have little or no training in research methods and some have negative attitudes about research. There is a prevailing myth that substance abuse treatment is largely a self-help movement that does not need professional intervention or scientifically based treatments. Even providers who have positive attitudes about research often do not have the skills to interpret research findings in their traditional forms—in research journals, monographs, or textbooks. Some suggestions for changing attitudes and knowledge about research include:

- Researcher-in-residence programs: Have a researcher meet with staff in the treatment agencies to discuss research findings or evidence-based practices. This may increase the communication between researchers and providers as well as foster more positive attitudes. Just make sure that you choose a researcher who has the ability to communicate with non-researchers and is willing to meet providers on their turf.

- Assign one staff member to write research briefs for your newsletter or bulletin board.

- Seek continuing education programs, in-service programs, or guest speakers that introduce research concepts or share their experiences with new practices.

- Start a journal club and share what you are reading with other staff.

- Involve staff on small scale research projects in your agency or region by including them on committees or teams to conduct needs assessments, measure outcomes, or address other treatment issues.

Lack of Practice-Research Partnerships/Collaborations

Service providers must be involved in setting research agendas and be active participants in applied research. Researchers need to find nontraditional ways to disseminate their research findings so that they are relevant and applicable to the field. Policy-makers need to base policy decisions on research, not public opinion. The only way that these problems can be solved is through collaborations. The National Treatment Plan (CSAT, 2000) outlined the relationships among the three major components of substance abuse treatment research:

- Knowledge Development (applied and basic research, such as that generated by NIDA, NIAAA, CDC, and investigator-driven research studies).

- Knowledge Transfer (training, changing attitudes, behaviors, and skills, such as the activities of Addiction Technology Transfer Centers).

- Knowledge Application (learning how to overcome barriers to implement new practices into the field, such as the Practice Improvement Collaborative mission).

However, for all of these components to work, collaborations across the funding agencies, service delivery funders, and state and regional substance abuse treatment arenas must be developed. All three components inform each other. The activities of practice-research collaboratives can include:

- Publication of research findings in diverse formats accessible to providers, such as newsletters, manuals, email or fax briefs, assessment tools, etc.

- Technical assistance in implementing new practices.

- Developing studies that focus on the adoption of new practices.

Lack of Resources

Perhaps the greatest obstacle to implementing evidence-based practices is the lack of resources. Resources include money, staff, computers, space, and materials, among others. Substance abuse treatment agencies have always been under funded and have always had to seek creative ways to provide services. Some of the ways to increase resources include:

- Partnerships with researchers who will write grants to provide services.

- Partnerships with businesses that may provide material goods, such as computers or training programs or photocopying.

- Community volunteer programs (these are particularly helpful in identifying individuals from minority or underrepresented groups to consult about cultural competence).

- Designate one staff member as the grant-writer and send this person to workshops on grant writing.

- Have fundraisers in the community.

- Partner with media agencies or individual reporters to publicize the good work your agency does.

Organizational Structure

Adoption and implementation often depend on factors directly related to the organizational structure, such as leadership (agency director's training, education, treatment philosophy, vision, and creativity), case load and staffing patterns, decision-making mechanisms, and cultures and subcultures of the agency. Hospital-based programs may differ from community-based programs in many ways, and may be more likely to adopt medically-based approaches such as pharmacological treatments. Community-based programs may be more likely to consider group-based psychoeducational treatments because of staffing patterns and organizational philosophy.

The age of the organization may be an important factor. Older agencies are more likely to have a well-defined philosophy or mission statement and may become more entrenched in their approach, thus less likely to adopt new approaches than newer programs still under development (Rogers, 1995); conversely, the older agency may be more stable and thus better equipped to try out new approaches because of a stable workforce. The length of time the director has been in place may also be important, as well as the educational degrees and level or type of training of the director. A director with a business background may provide different leadership than one with a mental health or substance abuse background.

Size of the agency may also be important, as larger agencies generally have more resources and greater flexibility to re-arrange those resources. The percent of staff with a master's degree or higher influences adoption, as does the profit status of the agency. Private agencies may be less likely to consider new approaches that might disrupt patient flow temporarily. On the other hand, managed care contracts often demand that the most cost effective treatments be provided (Roman et al., 2000). Finally, agencies with higher relapse rates of clients may be more open to change and trying new approaches than agencies that perceive their relapse rate is acceptable.

Evaluation of Evidence-Based Practices

Introduction

Once the advantages of implementing evidence-based treatment practices are recognized, one might easily ask: *Why should I evaluate evidence-based approaches – after all, haven't they already been proven?* Put simply, it may be *even more important* to evaluate evidence-based programs because:

1. The effectiveness of an evidence-based treatment depends on faithful and complete implementation. There are many reasons why a program may not be implemented precisely as written, but these deviations must be documented in order to understand either why the program was less effective than expected or to report back to the field that certain deviations did not impact effectiveness or even improve outcomes.

2. There are many lessons to be learned about how treatment programs work (or don't work) with specific populations or under unique circumstances – evaluating the program and reporting the results gives practitioners a chance to provide feedback and help refine the research base.

3. If programs do not achieve intended outcomes, it is important to be able to tease out whether or not the program was fully implemented or if other factors account for differences.

4. It is important to ensure quality control and reduce program "drift," thereby retaining the full effect of evidence-based practices.

5. It is sometimes necessary for programs to shift course slightly from established protocols due to cultural or linguistic population differences or unavoidable environmental circumstances (e.g., a large HMO reduces the number of treatment days they will pay for). In this case, the program needs to understand whether or not the changes they made affected outcomes.

Study after study has shown that strong and positive client outcomes result when programs *accurately* implement evidence-based protocols (e.g., Jerrell & Ridgely, 1999; Mattson et al., 1998; McHugo, Drake, Teague, & Xie, 1999). This premise has been shown to be true not only in the field of substance abuse treatment but also in child abuse prevention (e.g., Olds et al., 1999), cardiovascular health (McGraw et al., 1996), criminal justice (Blakely, Mayer, & Gottschalk, 1987), and employment (McDonnell, Nofs, & Hardman, 1989). Understanding the integrity of program implementation also means that researchers and practitioners can have greater confidence in evaluation results. For

example, evaluators studying the results of a smoking prevention program aimed at youth were able to report *with confidence* that the program had no effect on long-term smoking behaviors because they could show that the program had been rigorously implemented. In this example, the incorporation of fidelity measures into the evaluation gave the researchers a much better understanding of why the intervention did not work. In this case, it was not due to implementation failure, but due instead to flawed theory and design.

There are two main components of evaluations of evidence-based treatment programs: (1) *process evaluation* (or documentation of fidelity); and (2) *outcome evaluation* (did the program change behaviors?). These are described in the following sections.

Process Evaluation (Fidelity)

While process evaluation typically focuses on the characteristics of participants and the frequency and intensity, or dosage, of the intervention (often referred to as "reach and freq"), an assessment of fidelity adds value when evaluating evidence-based programs. Fidelity is "the degree to which a program's implementation matches the intended one" (Valente, 2002). Fidelity can be lost when treatment staff fail to apply the techniques of the evidence-based practice as they were trained. Programs often lose their fidelity to protocols over time or when they are implemented in unique settings. As programs grow and evolve, they may change in unexpected ways that can reduce effectiveness. This program "drift" is not always negative – some programs improve on outcomes because they are able to adapt successfully to local needs. Whether drift results in stronger or weaker outcomes, it is important to be able to report these findings back to the field so that other programs can gain from the lessons learned.

Because substance abuse treatment programs are notoriously complex, often incorporating an eclectic mix of talented staff, personalized treatment combinations, and ongoing modifications, it may be best to measure fidelity through multiple approaches to collect the best and most reliable information. Program architects and researchers must identify the critical components of an approach and distill those that are essential and non-essential to program integrity. In their review of the literature on fidelity measurement, Bond and his colleagues (2000) recommended a mix of chart reviews, observations of team meetings, surveys of clients and staff, interviews with staff, and fidelity checklists or scales. Such a multimodal approach – which can include both quantitative and qualitative measures – is more likely to accurately capture the full range of implementation.

Development of a fidelity measurement procedure may take time and resources, but the effort is rewarded because these measures ensure consistency across programs. One of the most frequently cited examples of a fidelity index in the clinical literature is the

Assertive Community Treatment (ACT) scale, which was based on expert ratings and the literature to reflect critical dimensions of that program (McGrew, Bond, & Dietzen, 1994; Teague, Drake, & Ackerman, 1995). Kaskutas and colleagues (1998) created a Social Model Philosophy Scale to examine the extent to which an alcohol treatment program follows a social model approach to treatment. This scale contains 33 questions divided into 6 conceptual domains that cover physical environment, staff role, authority base, view of substance abuse problems, governance, and community orientation (Kaskutas et al., 1998).

In his review of program fidelity measurement, Orwin (2000) emphasized the importance of including an assessment of context. Programs function within a broad community context and these contextual elements may play a part in determining program outcomes. For example, a program that is implementing an evidence-based treatment approach is affected by the wider array of services that are available – or unavailable – in a given community. Measures often used to study context include:

- Analysis of social and health indicators based on publicly available data from census, state, or municipal sources.

- Surveys of available local health and social services, including residential treatment beds available, housing programs, and job training services.

- Interviews with agency personnel about the availability and quality of local social and health services.

- Surveys that measure the collaboration that exists between and among local service providers.

In short, understanding how thoroughly an evidence-based program was implemented may be key to explaining outcomes, maintaining program quality, and contributing to the treatment field's overall understanding of what works, when it works, and why it works.

Outcome evaluation

Outcome evaluations have typically focused on levels of use and abstinence as the primary dependent variables. While these variables are extremely useful in understanding whether or not treatments are effective, there are other outcomes that may tell us even more about how treatments work over time. For example, it may be relevant to tease out more detail, such as the length of time of relapse, number of relapses in a given time frame, events surrounding an instance of relapse, time period between treatment and relapse, and reduction in use leading up to abstinence. Moreover, programs may be interested in observing *mediating* or *short-term* outcomes; that is, early

indicators that may be related to treatment success or failure, such as employment, family stability, mental and physical health, life satisfaction, and number of arrests. Depending on the program and the population, these indicators (separately or in combination) may be theoretically related to whether or not and how a client changes substance use patterns.

It is important for program staff and evaluators to untangle this complex mix of interventions, environmental context, mediating indicators, and outcomes. It may be helpful to articulate a "theory of change" in the context of a logic model that describes how the treatment program's activities result in measurable outcomes. Logic models are also very important in developing a process evaluation, although they may be less relevant for assessing program fidelity.

The Center for Substance Abuse Treatment (CSAT) proposed that use of a logic model can provide a linkage between treatment and evaluation activities that ultimately supports service improvement (Devine, 1999). A logic model states a clear path from etiology to treatment design to expected outcomes. CSAT describes a logic model as consisting of four parts:

1. Conditions and context—Description of the context in which the treatment program operates, including target population characteristics, community characteristics and resources, and government and health care system policies related to treatment services.

2. Activities—Services that make up the treatment program.

3. Short-term outcomes—Proxy or mediating outcomes that are expected to result following or in the course of treatment, such as reduced use of alcohol.

4. Long-term outcomes—Often called impacts or goals, these outcomes may include such goals as family reunification (Devine, 1999, p. 3).

Other models, including the approach for developing logic models developed by the Centers for Disease Control and Prevention (CDC) and the United Way, offer slightly varying components, such as stating inputs (e.g., resources, staffing) and outputs (e.g., treatment plan) (Centers for Disease Control and Prevention, 1999; United Way of America, 1996). Models can be drawn using boxes and arrows or as matrices, as shown below. We recommend creating an outcome logic model that starts with research questions to focus the model and includes indicators and data sources. The simplified example below integrates these approaches using the example of an alcohol treatment program.

Outcome Logic Model (Sample)

Research question	Activities	Short-term outcomes	Short-term indicators and data sources	Long-term outcomes	Long-term indicators and data sources
1. Did services result in a long-term change in drinking behavior and improved health and social functioning?	1. Motiva-tional interviews with trained counselor	1. Expressed motivation to change behavior 2. Change in recent (1-week, 30-day) use of alcohol 3. Change in quantity of alcohol consumed in past week / month 4. Change in depression (or other mental health indicator)	1. Evidence of readiness to change based on scale scores or therapist report 2. Change in self-reported alcohol use, frequency and quantity 3. CES-D or Beck Depression Inventory	1. Long-term change in use patterns (3-month, 6-month, past year) 2. Family relationships 3. Employment 4. Mental health improvement	1. Change in self-reported alcohol use, frequency and quantity 2. Change in nature of family relationships (interview, family functioning scale score) 3. Job initiation and continuation 4. CES-D or Beck Depression Inventory

By integrating fidelity assessments and traditional process evaluation with outcome evaluations, treatment programs can supply critical information about what really works in bringing about sustained improvements for all types of clients.

Conclusions

As substance abuse treatment effectiveness research increases and we identify practices that work, it is critical to study the processes by which these new practices become incorporated into the field and how alterations or modifications of these practices affect outcomes. This handbook is intended as a general guide to identifying and implementing evidence-based practices into real world settings. We hope that you will modify or adapt the strategies presented here to your own particular circumstances or use the ideas presented here to develop entirely new methods.

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Other Resources:

PIC national website: www.samhsa.gov/centers/csat/content/pic
Iowa PIC: www.uiowa.edu/~iowapic
ATTC national website: www.nattc.org
ASAM website: www.asam.org

About the Iowa PIC

The Iowa PIC is a statewide collaboration of substance abuse providers, researchers, policy-makers, and consumers in a rural state. A consensus process during our development phase in 1999 resulted in the identification of four broad priority needs in our state:

- Addressing the needs of clients with co-occurring disorders
- Addressing the needs of women and children
- Addressing the needs of clients with criminal justice involvement
- Providing treatment providers and policy-makers with resources to make better use of existing data (technical assistance)

The Iowa PIC developed projects in all of these priority areas. Products that are currently available on our website or in hard copy per request include:

- An instrument to measure line staff and program directors attitudes about working with clients with co-occurring disorders
- A newsletter on co-occurring disorders
- A CD-ROM that provides technical assistance on using the internet to find information, writing grant proposals, and developing evaluation plans
- A newsletter on women in the criminal justice system
- A manual for providers on child issues including types of group and individual therapies, guidance in establishing child services, and an explanation of termination of parental rights.

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