

Chapter 2

Identifying the Evidence Base for “What Works” in Community Corrections and Addiction Treatment

2.1 Introduction and Overview

The evidence-based practices (EBP) movement emerged in the 1990s as a strategy to reduce the gap between science and practice in many disciplines that involve the delivery of services: medicine, education, social services, substance abuse, mental health, and criminal justice. In the past, standards varied regarding the definitions of “best practices” and what might constitute an EBP; these were often defined in an idiosyncratic manner. The more recent interest in EBP focuses on improving outcomes by ensuring that direct service providers use proven techniques and technologies (defined by the results from scientific studies) in their daily practices. Professional organizations and federal agencies have been actively promoting the identification and implementation of EBP in health care, mental health (National Advisory Mental Health Council, 2006), substance abuse (NIH, 2004), community corrections (NIC, 2004), and other areas. This interest has spurred the creation of numerous initiatives to disseminate scientific knowledge through comprehensive literature reviews that synthesize and quantify the results using recognized meta-analysis and systematic review procedures.

Synthesized findings are disseminated to the field via information sessions or websites, practitioner training, and publications. Prominent examples include the Office of Juvenile Justice Prevention and Delinquency (OJJPD) Blueprints for Violence Prevention, Substance Abuse and Mental Health Services Administration’s (SAMHSA) National Registry of Evidence-Based Programs and Practices (NREPP) (<http://www.nrepp.samhsa.gov/AboutNREPP.aspx>), Cochrane Reviews (<http://www.cochrane.org>), and Campbell Collaboration (<http://www.cochranecampbellcollaboration.org>). These efforts focus primarily on methods for reviewing the literature, establishing criteria for labeling a treatment or practice as evidence-based, identifying and rating interventions, and producing summary papers that systematically review research findings. An example of efforts to simply translate findings and then disseminate to the field is the National Institute of Corrections Evidence-Based Practices for Community Corrections (<http://cjinstitute.org/projects/integratedmodel>).

The term “evidence-based practice” has many definitions but generally requires a thorough review of the research for a given intervention or practice to identify studies that found positive outcomes in real-world settings. The preference is for scientifically rigorous studies using randomized controlled trial (RCT) designs or high quality quasi-experimental designs. The accepted standard of an EBP is that there must be at least two rigorous studies (i.e., randomized designs or high quality quasi-experimental designs) with similar findings on key outcomes. Two examples of EBP definitions are as follows:

- “Evidence-based practice is the integration of best research evidence with clinical expertise and patient values... Patient values refers to the unique preferences, concerns, and expectations that each patient brings to the clinical encounter” (Institute of Medicine, 2001).
- “Evidence-based practices are interventions for which there is consistent scientific evidence showing that they improve client outcomes” (Drake et al., 2001).

Unlike the fields of medicine and other health care professions, identifying EBP in correctional practice and behavioral health (i.e., substance abuse, mental health) is a much more complex undertaking given that the findings are subject to more debate and controversy. This is because the degree of improvement in symptoms can be subjective as to whether an intervention or practice is “effective,” whether the positive effects are clinically meaningful, and whether the findings are statistically significant. For example, few studies are longitudinal in nature, and the findings often reflect short-term outcomes of 12 months or less. This raises concerns about the significance of the study findings given the limited information on duration of effect, with some arguing that progress in 12 months (or less) is significant while others find this timeframe too limited to make a judgment about effectiveness. In addition, one must consider that many treatment counselors and criminal justice practitioners are highly invested personally and professionally in delivering services or using clinical techniques with which they are familiar and comfortable; the criteria that the counselors or staff use may differ from the research findings.

A core challenge for the EBP field involves the practicalities of conducting field research in behavioral health, substance abuse, and correctional interventions/programs. The demarcation of a practice or treatment as an EBP is a lengthy and sometimes cumbersome process due to the difficulty and expense of conducting rigorous well-controlled scientific studies (primarily using randomized controlled trials) that have sufficient follow-up periods to detect differences in client outcomes. There is also considerable debate whether mental illnesses and substance abuse can be eradicated or whether reductions in symptoms are sufficient for a treatment to be deemed effective. The same is true for criminal conduct. Long-term abstinence for drug abusers can be quite difficult to achieve (McKay, 2001). For correctional interventions, the problems are even more exacerbated because justice-related funding agencies at the federal (e.g., U.S. Department of Justice) and state levels generally do not provide funding for studies that exceed a few years. Criminal justice stakeholders are often reluctant to approve RCTs with offender populations because of concerns about due process, public safety, and interference with judicial, correctional, or prosecutorial authority. That is, in justice settings there is

much concern that randomized trials sacrifice the nuances of decisions made regarding the delivery of services and programs in correctional settings, and that correctional staff should not be bound to a RCT design, especially when that would constrain criminal justice decision making or when offender behavior may jeopardize public safety. The emphasis on RCTs, complicated by the realities of ensuring public safety, increases the complexity of conducting such studies in community corrections settings.

RCTs and long-term follow-up studies are more common in addiction treatment research. Typical grants funded by the National Institutes of Health, particularly the National Institute on Drug Abuse and the National Institute of Mental Health, are five years in duration whereas funding from the National Institute of Justice tends to be under three years. Even with fewer barriers to conducting rigorous studies in addiction treatment research, the addiction treatment field struggles with relying totally on a scientific basis for recommending particular treatments or therapies. The addiction treatment profession still has a strong and influential organizational culture that values individual clinician experience and viewpoints in determining what type of treatment might work best for different types of clients in different treatment settings (Capoccia et al., 2007). The field is caught in a “Catch 22” given that clinical trials may reveal new therapies but the tendency is for the addiction treatment field to greatly value clinical experience and judgment over science-based research findings (Norcross et al., 2005). Counseling staff may be reluctant to adopt and implement an EBP that contradicts or interferes with the type of counseling or services they were trained on or have been delivering; this can often result in drift from the EBP-defined intervention and poor implementation of an intervention that in turn reduces the effectiveness of the EBP. Counselors in recovery may be motivated to use techniques that helped them overcome their substance abuse problems, regardless of whether those techniques have been designated as EBP. The question of whether clinician or patient input is necessary to designate an intervention or practice as evidence-based is controversial, as discussed in detail below.

Another frequently mentioned concern is whether the strategies that researchers use in RCTs compromise some of the “real-world” conditions that can affect the delivery of EBP. These issues are unresolved but exemplify a significant tension that affects adoption of evidence-based practices in the field. For this reason, clinical researchers have proffered the need to conduct *efficacy* trials (using RCTs) to demonstrate the ability of a practice or treatment to improve outcomes followed by an *effectiveness* trial to demonstrate that the practice delivers similar outcomes in real-world settings (see below for more discussion). A similar tension exists in correctional and criminal justice settings where practitioners feel that their expertise and professional judgment are not adequately integrated into RCT or high quality quasi-experimental research designs.

Regardless of strains between science-based identification of “evidence” and clinical practice, the correctional and substance abuse fields have defined a set of principles for identifying evidence-based practices and have designated some practices as EBP. This has allowed both fields to create taxonomies to designate practice or treatments according to the degree of scientific rigor. In this regard, clinical practice refers to accepted or consensus guidelines by the disciplines and best practices

refers to practices that are well-respected by the field(s) and where some research has been conducted to affirm efficacy and effectiveness.

2.2 Basic Definitions and Concepts

Technology Transfer (TT) is about taking the findings from science (the laboratory) and applying them in real-world settings in a way that leads to meaningful change in practices and treatments provided. Knowledge development and knowledge utilization are processes embedded within TT. TT helps process the science (findings from studies) and churns it through organizational mechanisms to become reality, while maintaining the integrity of the originally defined intervention or practice. Many factors influence the TT process (e.g., sociopolitical environments, leadership, staffing, severity of the crime problem in the community, interagency efforts, historical efforts, resources) in ways that shape the resulting product, practice, or intervention. It is necessary to fully understand how the organizational, interagency, and personnel processes affect the outcomes both in terms of the nature of the intervention/practice and the outcomes at the organizational and client level. A new field of study, *implementation science*, is geared toward providing a scientific process to understand how to maximize implementation to achieve adherence to the science-based interventions/programs and to better understand the components of effective implementation processes (Fixsen, Naoom, Blase, Friedman, & Wallace, 2005; Proctor et al., 2009).

Because many interventions enter into clinical or correctional practice and become well accepted over time *without* rigorous scientific evidence to support the intervention, TT must address the issue of compatibility of EBP with existing practices. Although this reflects that many clinicians and practitioners greatly value their own observations and experiences in assessing whether an intervention works, it also reflects the reinforcement that the treatment and justice/corrections staff receive from their supervisors, funding agencies or the public on the services they provide. However, there is scientific consensus that observation, anecdotes, and personal experiences, although important, furnish relatively low levels of evidence to support a determination that an intervention or practice is effective because such techniques rely on subjective and nonreproducible assessments of impacts. Figure 2.1 below shows the various levels of evidence ranked from lowest to highest scientific strength.

2.2.1 Hierarchy of Levels of Evidence

In addition to the variety of research designs (e.g., quasi-experimental and randomized experiments), there are different levels of evidentiary strength for drawing conclusions about research findings on interventions and practices. The highest standard, *gold*, has traditionally required randomized trials (preferably theory-driven)

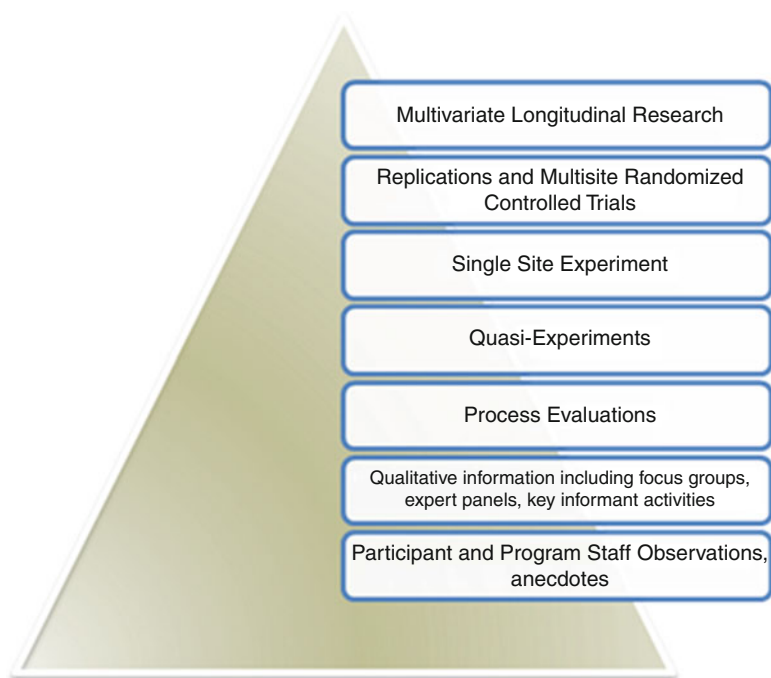


Fig. 2.1 Gradations of scientific methods and approaches

with multiple replications in different sites, controls for sample attrition, significant and sustained reductions in risk behaviors, and a preponderance of evidence supporting effectiveness across multiple studies. A less rigorous standard, *silver*, would include the same outcomes and replications as the *gold* standard but using a quasi-experimental design with strong statistical controls. Quasi-experimental designs include case control, statistically matched samples, regression discontinuity, time series, and single sample pre-post designs with or without longitudinal observations (Campbell & Stanley, 1963). A *bronze* standard would use matched comparison groups but without adequate statistical controls, and the lowest standard would entail inadequate research designs. The rigor of the studies signifies the degree to which the findings are subject to error or bias due to the methods or the variables, and to the level of internal validity.

Despite the broad acceptance by research funders that RCTs are the *gold* standard for determining the effectiveness of interventions, some theorists and statisticians have raised warnings about the limitations of RCTs (Brown et al., 2009; Manski, 2011; Sampson, 2010). These concerns include the difficulty of drawing causal inferences about intervention effects from many RCTs (Sampson, 2010), the commonality of selection bias in experimental studies (Belenko, Fabrikant, & Wolff, 2011; Berk, 2005; Sampson, 2010), the lack of research on the effective components (or “active ingredients”) of interventions (Taxman & Thanner, 2006), concerns about small and homogeneous samples in the typical RCTs (Taxman & Rhodes, 2010),

sample attrition problems and lack of information on the fidelity of the intervention (Taxman & Friedmann, 2009), sample contamination between experimental and control groups (Taxman & Rhodes, 2010), follow-up periods that are too brief to determine long-term intervention effects (Taxman & Rhodes, 2010), and the limitations of RCTs for informing policy (Sampson, 2010). To yield two or more studies of similar findings requires a sufficient time to conduct numerous RCTs to determine that an intervention is effective. Added to this is the need to extend the RCT to disparate populations in different settings to replicate the findings. For example, a single-site RCT with a sample of 150 offenders and a 2-year follow-up can take 5 years to complete; this can limit the value of the RCT model for policymakers who need to make relatively quick decisions about which interventions to adopt.

For these reasons, some have called for a greater reliance on multicenter trials where there are simultaneous RCTs in different settings and with different populations (Weisburd & Taxman, 2000), rigorous observational studies, mixed methods approaches (Palinkas, Horwitz, Chamberlain, Hurlburt, & Landsverk, 2011), and multivariate longitudinal studies (Sampson, 2010; Tucker & Roth, 2006). The latter (longitudinal) design involves following one cohort through and after treatment, collecting frequent and comprehensive data that may allow the researcher to isolate the components of effective treatment and the factors that affect treatment success and failure along different time points. This model is specifically useful for substance abuse or mental health disorders, or criminal behavior, where the duration of the treatment impact may be affected by factors other than the specific intervention.

Nonetheless, despite the above concerns, RCTs remain the standard exemplar by federal funders, researchers, and evidence-based repositories. These sources frequently make decisions about which interventions or practices are effective and evidence-based. The Food and Drug Administration (FDA) and NIH models retain their primacy and are likely to remain the preferred models for the foreseeable future given the focus on reducing harms to individuals, as discussed below. The FDA model requires at least two clinical trials with similar outcomes to indicate a medication or procedure is ready for public consumption. NIH employs a similar standard.

2.3 Efficacy vs. Effectiveness

Well-established standards for the scientific process also describe several stages that are needed to develop knowledge about the evidence base for interventions and practices. *Efficacy* refers to evidence that a treatment/practice has beneficial effects when delivered under carefully controlled conditions designed for experimentation. In efficacy studies (Phase II trials, see below), the researcher exerts considerable control over sample selection, delivery of the intervention, and the settings in which the intervention takes place. This best replicates the laboratory environment in the natural sciences where the scientist exercises the most control over every aspect of an experiment. *Effectiveness* refers to evidence that a treatment has beneficial effects when delivered to heterogeneous samples of clinically referred individuals treated in diverse clinical settings by clinicians rather than researchers (Phase III trials; see below).

Efficacy trials usually involve randomized clinical trials while effectiveness studies may also include traditional evaluations as well as multisite replications using randomized trials. The question about whether an effective intervention is *transportable* (Schoenwald & Hoagwood, 2001) has been raised and has spurred interest in the resiliency of outcomes as the intervention or practices move from efficacy to formal effectiveness trials to more general use (diffusion and dissemination). A thorough discussion of transportability issues is in Chap. 8. *Sustainability* is another important issue, and refers to the extent to which an intervention remains effective over time and continues to be implemented with fidelity (Fixsen et al., 2005). When an intervention is sustainable, staff embraces it as being effective and preferable to previous or alternative approaches. To sustain an intervention, it is also usually necessary that local resources be used after the initial external or grant funding is completed.

Comparative effectiveness research (CER) is a relatively new approach to health care research that seeks to compare evidence on the effectiveness and potential harms of different treatment options simultaneously (Sox & Greenfield, 2009). In contrast to the more traditional RCT model of comparing a new intervention to a placebo or standard care, CER seeks to use evidence from existing published research, including systematic reviews and meta-analyses, to provide information about the relative impacts of different (often comparable) treatment options or models. CER can also be conducted using new studies that randomize patients into two or more different treatment options to determine the effectiveness of either approach, and to ascertain whether one treatment is better suited for one type of patient. CER can fulfill an important goal for the federal government and health care professional in generating timely information about different treatments and disseminate the results in a way that is easily understood and usable by clinicians, policymakers, and patients. To promote RCTs that compare different treatment interventions to one another, the Agency for Healthcare Research and Quality of the U.S. Department of Health and Human Services outlines seven steps for using CER to compare treatments and increasing the public health impact of the findings (<http://www.effective-healthcare.ahrq.gov/index.cfm/what-is-comparative-effectiveness-research1>):

1. Identify new and emerging clinical interventions.
2. Review and synthesize current medical research.
3. Identify gaps between existing medical research and the needs of clinical practice.
4. Promote and generate new scientific evidence and analytic tools.
5. Train and develop clinical researchers.
6. Translate and disseminate research findings to diverse stakeholders.
7. Reach out to stakeholders via a citizen forum.

CER can help clinicians and policymakers make more informed choices about which intervention to use with which population. Thus, although a relatively new approach, CER has potential utility for helping community corrections and addiction treatment agencies make decisions about which program or practice to implement with their population. The American Recovery and Reinvestment Act of 2009 created the Federal Coordinating Council for Comparative Effectiveness Research to coordinate CER throughout the federal government.

In theory, and certainly in practice, all research strategies have some value for advancing science and knowledge. To be most useful for practice and policy decisions, researchers should maximize scientific rigor and use a systematic process for developing knowledge, starting with observation and qualitative research through randomized clinical trials with appropriate statistical analyses. The basic approach that underlies all levels of inquiry is systematic observation and objectivity and a set method for collecting and analyzing data. From a methods perspective, what hierarchically differentiates research designs is the extent to which potential threats to internal validity (i.e., nature of the intervention, techniques to recruit patient or collect data, comparability of experimental and control groups, sample attrition and missing data) and external validity (i.e., generalizability) are controlled. Moving up the scientific scale, process and implementation evaluation allows measurement of how an intervention is operating and its effects upon participants as well as fidelity of implementation (adherence to the original intervention and study design). Finally, rigorous designs that include well-designed control groups range from single site experimental and quasi-experimental studies to the *gold* standard of multisite randomized clinical trials. Adding multiple waves of data collection to increase the length of follow-up in longitudinal designs also strengthens the study findings by examining the duration of the effect or the patterns of decay in outcomes.

2.4 Frameworks for Determining the Evidence Base

A number of processes are available to determine the evidence base. This section will identify the different approaches for determining the evidence base and scientific processes to synthesize information. What are the procedures and process used to decide that an intervention or practice is effective (i.e., evidence-based)? What are the benefits and drawbacks of these methods? How is information about EBP disseminated to the field? What are some of the types of efforts used to promote the adoption and implementation of EBP? In this section, we address these questions.

2.4.1 *The Food and Drug Administration (FDA) Model*

The evidence determination process has its roots in the FDA Model for reviewing scientific evidence to evaluate the effects of pharmaceutical treatments (FDA, 2010). The FDA guidelines dictate that in order for a medication and/or device to be considered appropriate and safe for public use, a series of clinical trials need to be completed. The evidence needs to be based in strong science and research design, and be able to determine whether the drug/product is both safe and effective. The FDA model requires: (1) methodological quality of the evidence; (2) findings of a positive treatment effect that are relevant to appropriate target groups (e.g., by gender, age categories, and disease); (3) findings replicated in a minimum of two different studies; and (4) an overall consistency of the evidence in terms of the

direction of the effect. After assessing the totality of the scientific evidence, the FDA determines whether there is “Significant Scientific Agreement” to support the hypothesized effect. Given the overarching importance of scientific rigor, the FDA model calls for multiple, replicated randomized controlled trials before a drug/product can be designated as effective and safe for human consumption. The resulting evidence is then used to develop information for both dosages and impacts.

2.4.2 Applying the FDA Model to Behavioral Interventions

In translating the FDA model into behavioral health interventions, Rounsaville, Carroll, and Onken (2001) proposed a staged model of intervention research. The process begins with intervention development, followed by a pilot randomized trial of intervention efficacy in one site under carefully controlled conditions (Stages 1a and 1b). The National Institutes of Health guidelines expand on this model and define four stages of clinical trials research for treatment interventions to determine whether an intervention is effective. The trials at each phase have different purposes and help scientists answer different questions. In Phase I trials, researchers conduct initial tests of an experimental drug or treatment in a small group of people (20–80) in order to evaluate its safety, feasibility and acceptability, determine dosages, and identify any unanticipated negative effects. Phase I trials provide early evidence of efficacy.

In Phase II trials, the experimental treatment is given to a larger group of people (100–300) to determine efficacy in a controlled setting with a relatively focused target population and to further evaluate its safety and side effects. In Phase III trials, the experimental intervention is tested in large groups of people (1,000–3,000) in multiple settings and locations, with less researcher control over the intervention or the selection of the study subjects. This is referred to as a multisite trial, often using multisite longitudinal data to determine effectiveness over time. Phase III trials determine whether an intervention is effective, examine any unanticipated negative consequences, and compare the intervention to other commonly used treatments. The replicated RCTs can serve to determine the benefit–risk relationship of the intervention and assess its effects in different populations. Phase IV trials continue obtaining data on long-term effects of the treatment, assessing effectiveness in different populations, assessing costs and benefits, identifying optimal dosage, and measuring “active ingredients” (e.g., dismantling studies).

2.4.3 Synthesizing Across Research Designs

The FDA and modified behavioral interventions models are based almost exclusively on randomized clinical trials. But, in many disciplines like criminal justice and education, it is common for studies to use a broader range of methods that vary in rigor. In criminal justice studies, the Maryland Scientific Methods Scale (Sherman et al., 1997) and similar schemes have been used to accommodate the varying

Table 2.1 Levels of evidence in the Maryland Scale

Level 1 (weakest evidence)	Correlation between a crime prevention program and a measure of crime or crime risk factors at a single point in time
Level 2	Temporal sequence between the program and the crime or risk outcome clearly observed, or the presence of a comparison group without demonstrated comparability to the treatment group
Level 3	Comparison between two or more comparable units of analysis, one with and one without the program
Level 4	Comparison between multiple units with and without the program, controlling for other factors, or using comparison units that evidence only minor differences
Level 5 (strongest evidence)	Random assignment and analysis of comparable units to program and comparison groups

designs while rigorously assessing the evidence base. In this scheme, various studies are combined to determine the level of knowledge that exists across studies that range in design from no control groups to randomized trials. The Maryland Scientific Methods Scale was developed from a consensus process whereby researchers developed techniques to combine studies, regardless of rigor, to inform policymakers of the state of knowledge in a given area. This framework forms the basis for designation of interventions as evidence-based, as shown in Table 2.1, and has been used or adapted in various evidence-based repositories discussed in Section 2.5.

A tension exists between internal validity (integrity of the intervention) and external validity (generalizability to broader populations in different settings). As one moves up the scale of scientific rigor, threats to internal validity of the evidence decrease, yielding more confidence in the findings. Relatively few addiction treatment programs and practices have been designated as evidence-based in criminal justice settings, as discussed below. This is largely due to the difficulty of conducting studies in justice settings that meet the highest standard of scientific rigor. For example, it is perceived to be unethical and sometimes legally impossible to randomly assign offenders to prison or probation, and ethically problematic to withhold treatment from an offender if that treatment could help the individual avoid incarceration. Accordingly, these issues as well as other factors (e.g., cost, feasibility and acceptability, transportability) may lead policymakers to adopt interventions with lower levels of evidentiary strength. This contributes to the selection and continued use of interventions that do not have the strongest evidence base.

2.4.4 Consensus Processes

The scientific process is different from consensus approaches. Consensus approaches can involve activities such as focus groups, panels of experts and key informant surveys that access the richness of clinical experience but do not include rigorous hypothesis testing. Consensus approaches are important from many dimensions, and in fact can be used in conjunction with the scientific process. Consensus approaches can be used to enhance the research by including stakeholders in the

definition of interventions to study and to synthesize clinical and scientific information. Such strategies can be used to identify potential new interventions and practices, to identify key outcome measures as well as possible moderators and mediators, and to ascertain whether the findings are feasible and sustainable in real-world settings. Such approaches are insufficient for testing whether the idea or concept can actually affect client outcomes but they can garner support for the utilization of the findings after a study is completed. Although one dilemma is the sometimes nonrigorous process associated with the consensus approach, it is recognized that the consensus approach allows the field to have input, particularly when there are inconsistent findings or concern that the intervention or practice tested may not be suitable for the field. Many groups that support EBP to guide policy and practice recognize the value of the consensus model, and often include stakeholders in the EBP designation process. The general perception is that such a process will ease dissemination efforts and contribute to greater utilization of the research findings. Stated simply, the consensus approach is part of a process to reduce the gap from research to practice, a core goal of TT as well as the EBP movement.

2.4.5 Systematic Reviews and Meta-Analyses

Increasingly, scholars and EBP repositories are relying on systematic reviews and meta-analyses to rigorously summarize the conclusions that can be drawn from the empirical literature about the effects of specific programs or interventions for offenders in specific settings. Systematic reviews incorporate methodological criteria for synthesizing information across various studies that vary in terms of quality of the design and statistical methods. These reviews are important because there may be numerous existing program evaluations and intervention studies, including studies that have not been published in the scientific journal-based, peer-reviewed literature (referred to as *gray* literature). The challenge of the synthesis process is to draw meaningful and defensible conclusions across a number of studies where the quality of studies varies substantially including different instrumentation and measures, target populations, and statistical analysis methods; different studies may reach different conclusions about efficacy; studies may be done in different settings with different populations; different studies may include different types of bias that raise questions about the internal or external validity of the findings; or the number of publications and journals may be overwhelming and difficult to sift through or not be readily accessible to program staff or policymakers.

For these reasons, program developers, policymakers, and researchers need help in understanding what can reasonably be concluded from existing research findings, what is unknown, and what is unclear. Systematic reviews are of increasing importance in the health care and justice fields. These reviews synthesize studies, using agreed upon standards for addressing methodological weaknesses, in a meaningful way that is also very “customer friendly.” The impetus for systematic review methods came from the Cochrane Collaboration, an international organization that seeks to improve health care decisions through the preparation, maintenance, and

dissemination of systematic reviews of the risks and benefits of health care interventions (<http://www.cochrane.org>; see Sect. 2.5). These reviews involve complex procedures, and require many judgments to be made (Oxman, 1994); systematic reviews may introduce another set of biases given the decision criteria required in the synthesis process (see below). A good review needs to be explicit about the selection criteria, search strategies, coding methods, and study quality ratings. Even when the review is explicit, it is clear that the researchers are making decisions about which studies to include and the decision criteria to make determinations about “effectiveness.” Two sample definitions of systematic reviews are:

“[Systematic] reviews ... use rigorous methods for locating, appraising, and synthesizing evidence from prior evaluation studies. They contain a methods and results section and are reported with the same level of detail that characterizes high-quality reports of original research” (Farrington, Petrosino, & Welsh, 2001, p. 340).

“Systematic reviews ... answer a clearly formulated question, employing systematic and explicit methods to identify, select, and critically appraise relevant research and to collect and analyze data from the studies that are included in the review” (Mowatt, Grimshaw, Davis, & Mazmanian, 2001, p. 55).

General guidelines for summarizing results from the systematic review (see Box 2.1) include (Oxman, 1994):

- Draw conclusions only from the evidence reviewed alone.
- Recommendations should be linked to the strength of the evidence, based on design quality (but also relevance and concerns about attrition and missing data).
- The review should be explicit about values and preferences.
- Subgroup analyses should be interpreted with caution (these may have been *post hoc*, the subgroups may not be randomly selected) subgroups may not be appropriate targets for the intervention, etc.
- Different statistical analyses may result in different conclusions.
- Sensitivity analyses should be conducted if possible (e.g., unpublished vs. published studies, by rigor of included studies). How sensitive are the results to the methods used for the review, how robust are the findings across methods, populations? Provide confidence intervals around the effects to provide a good indication of the precision of the findings.

Box 2.1 Options for Reporting Systematic Review Findings

- Percentage of studies (within study quality groupings, populations, settings, other subgroups, perhaps) that found a significant difference in outcomes.
- Calculating the average effect size (a standardized measure of the difference in an outcome between the experimental and control groups).
- Calculating the Odds Ratio (a standardized measure that indicates the direction and size of the impact between experimental and control groups).
- A forest plot showing the range of effect sizes across studies. One can also calculate a weighted estimate of treatment effect but the plot illustrates the trend across studies.

Systematic reviews and especially meta-analyses typically consolidate findings across disparate studies by calculating outcome differences into standard effect sizes. Some argue that effect size is more important than probability values, statistical significance or hypothesis testing (Grimshaw, Eccles, & Tetroe, 2004), since it standardizes differences between the experimental and control groups across different measures. However, the relative value of effect size vs. statistical significance has generated much debate in the field (Weisburd, Lum, & Yang, 2003). Statistical significance indicates the degree to which one can have confidence in the findings based on the probability that the difference between the groups was not due to chance, the size of the sample, and the variance. But effect sizes are easier to interpret given that they can be translated into a measure of magnitude of the effect: <0.20 is considered a small effect, <0.40 is considered a medium effort, and over 0.40 is considered a large effect (Cohen, 1988). However, effect sizes do not address the issue of the degree to which one can have confidence that the results are not due to error. Most criminal justice and behavioral health research tends to have a small effect overall. It can also be useful to convert effect sizes into percentage differences for ease of interpretation by policymakers and practitioners.

Meta-analysis, in which outcome data are pooled across studies, is a subset of systematic reviews. If study designs, populations, and settings differ too much across studies, then it may not be appropriate to aggregate data. Pooled effect size may also mask important subgroup differences. It is important to look at variations in effect sizes and the factors that may affect the direction and size of the effect (this can be done statistically). Many systematic reviews now incorporate moderator and mediator analyses to examine the differential effects of an intervention across subgroups or in different settings. For example, in a meta-analysis of drug court research, Wilson, Mitchell, and MacKenzie (2006) reported that the pooled odds ratio for recidivism (another standard measure) was somewhat higher for diversion drug courts (1.93) compared with postadjudication courts (1.83), mixed model courts (1.24), and courts of unknown type (1.68), indicating that diversion drug courts have better overall outcomes than other types of drug courts. Researchers are often using these types of analyses to illustrate the differential outcomes from various processes that can be important to translational researchers to identify the settings and populations where certain practices and interventions are more likely to yield positive findings in real world settings.

The following issues need to be considered when summarizing findings and drawing conclusions about the research in systematic reviews of research evidence:

1. Factors other than the efficacy of the intervention could be related to outcomes. These include heterogeneity in study locations, different populations, implementation fidelity, or subversion of the experiment. Intervention effects vary by offender risk level, probability of the outcome, demographic characteristics, treatment setting, or other factors. Some practices or interventions may have an impact on certain outcomes but not others.
2. It is important to note possible sources of bias in the systematic review. This includes publication bias where negative results are less likely to be written up or published (so excluding unpublished studies may inflate the real effect size),

selection of studies to include, and measures. Although outcome studies that are conducted by program developers tend to have significantly greater effect sizes than studies conducted by independent researchers (Petrosino & Soydan, 2005), researchers can use this to identify moderators that are related to differential effect sizes.

3. Effect size must be weighed against practical or clinically meaningful effects (Lipsey & Wilson, 1993). One cannot necessarily conclude that a small effect size is not of practical or policy significance because it is possible that such a practice could be implemented widely, and therefore valuable from the perspective of incremental changes. As Oxman (1994) states, “no evidence of effect does not equal evidence of no effect.”
4. Systematic reviews should consider and compare the harmful as well as beneficial effects of the intervention, analyze the variations in relative effects and the reasons for these variations, and compute predicted effects by offender type (Centre for Reviews and Dissemination, 2009).

2.5 Evidence-Based Repositories

An important advantage for dissemination strategies that emanate from the synthesis process is that organizations have created readily accessible repositories of EBPs and syntheses that are available to the public. In the following section we summarize the goals and content of these repositories.

2.5.1 *Cochrane Collaboration/Cochrane Reviews*

An important advancement in the promotion of systematic reviews to address the research-to-practice gap is the Cochrane Collaboration, an international organization formed in England in 1993. Cochrane seeks to promote evidence-based decision making in health care and improve health care decisions through the preparation, maintenance, and dissemination of systematic reviews of the risks and benefits of health care interventions (<http://www.cochrane.org>).

Although the primary focus is medical care, this international group paved the way for methods to synthesize research findings and to disseminate research findings. Cochrane has contributed significantly to the field through its methods and specialized field areas where international workgroups join together to address the knowledge development and utilization issues. The Cochrane Collaboration promotes evidence-based decision making in health care and disseminates these Cochrane Reviews to the public to foster the use of evidence-based medicine.

To date, more than 4,000 systematic reviews have been published online via the Cochrane Library (<http://www.thecochranelibrary.com/view/0/index.html>). A Cochrane Review is recognized as a publication of high significance in the field given the rigorous review criteria. Although review summaries are available free of charge, a subscription is needed to access the full systematic review. The Cochrane Collaboration has a section devoted to substance abuse, public health, HIV/AIDS, and justice health that contains information on addiction treatment and some correctional interventions. The Cochrane Collaboration has played an essential role in fostering the importance of evidence-based decision making and developing a detailed and rigorous protocol for conducting systematic reviews of research that has greatly impacted the field. Further, the Cochrane Collaboration spurred the development of other systematic reviews in social sciences, in particular the Campbell Collaboration devoted to social sciences.

2.5.2 Campbell Collaboration—Crime and Justice Group

The success of the Cochrane Reviews spurred interest in developing similar protocols for reviewing the effectiveness of social and educational interventions, resulting in the establishment of the Campbell Collaboration. The Campbell Collaboration was formed in 2000 to extend the Cochrane Collaboration model to social interventions. Campbell includes five Coordinating Groups: Social Welfare, Education, Methods, Crime and Justice, and the Users Group (<http://www.campbellcollaboration.org/Library/Library.php>). As with Cochrane, the main function of the Campbell Collaboration is to sponsor and disseminate systematic reviews of research on social interventions. Using methods similar to Cochrane Collaboration (Noonan & Bjørndal, 2010), the Campbell Collaboration Crime and Justice Group (CCJG) solicits topics from systematic review authors, conducts a peer review of the review procedures and the final systematic review, and hosts an online library. One difference from Cochrane is that Campbell reviews include unpublished studies to reduce publication bias and to extend the number and type of studies that can be included. The Campbell Collaboration recognizes the potential value of nonrandomized designs, particularly in disciplines such as crime and justice where RCTs are rare and more difficult to implement. Reviews are posted on the website (http://www.campbellcollaboration.org/crime_and_justice/index.php) and are available to the public at no charge. An effect size calculator for systematic reviews, including all of the different types of analyses (discussed above), is available on the website (http://www.campbellcollaboration.org/resources/effect_size_input.php) at no charge.

In addition to the systematic reviews, the CCJG has adapted the CONSORT (Consolidated Standards of Reporting Trials) statement for crime and justice studies to standardize reporting of methodological information (Campbell, Elbourne, & Altman, 2004). This ensures a consistent methodology and content across reviews.

Because Campbell reviews focus on social interventions, the research literature may be more diffuse, have multiple outcomes (e.g., drug use, criminal behavior, mental health) defined differently across studies, and have fewer randomized trials.

As of December 2010, 25 reviews have been completed by the Crime and Justice Group. Three are related to substance abuse treatment (http://www.campbellcollaboration.org/reviews_crime_justice/index.php):

- Effectiveness of incarceration-based drug treatment on criminal behavior.
- Effects of drug substitution programs on offending among drug addicts.
- Effects of drug courts on criminal offending and drug use.

The Campbell Social Welfare Group has several protocols related to substance abuse including case management, domestic violence programs, parent training, multisystemic family therapy, and other areas of interest to the substance abuse and criminal justice disciplines.

2.5.3 National Registry of Evidence-Based Programs and Practices

The National Registry of Evidence-Based Programs and Practices (NREPP) is funded by SAMHSA and is the successor to the Center for Substance Abuse Prevention’s National Registry of Effective Prevention Programs which began in 1997. Under the old model, 150 prevention programs were designated as *model, effective, or promising interventions* depending on the extent of rigorous research on their effectiveness. In 2004, NREPP was remodeled and the rating system modified, and expanded to include treatment interventions. In place of the three categories of programs under the previous model, NREPP now provides an Intervention Summary that includes: (1) general information about the intervention, (2) a summary of the client outcomes reviewed, (3) reviewer ratings of the Quality of Research and Readiness for Dissemination (see below), (4) list of the materials and studies that were used in the review, and (5) information sources for learning more about the intervention. There is no specific designation as to whether an intervention is “evidence-based,” and NREPP specifically notes that the ratings do not necessarily reflect the effectiveness of the intervention. NREPP seeks to summarize the state of the evidence and rate its quality, but leaves it up to decision makers to use the ratings and other program information to determine whether the intervention should be adopted for their own particular needs.

NREPP submissions are self-nominated by intervention developers, and are reviewed by an external panel of experts trained in the NREPP review criteria, using a multipart rating system. The *Quality of Research* rating indicates the strength of the evidence that the intervention has positive effects on client outcomes. Where there are multiple outcomes reported, a different Quality of Research rating will be

applied to each outcome. The rating uses a scale from 0.0 to 4.0 for each component of the quality rating, with 4.0 as the highest rating. The rating is based on research design, quality of data, reliability and validity of measures, missing data and sample attrition, intervention fidelity, types and appropriateness of statistical analyses, potential confounding variables, internal validity, and other factors. A recent review of the process noted that the majority of studies were generated by the developers of the intervention, and their studies tend to have more positive findings than those conducted by outside reviewers (Wright, Zhang, & Farabee, 2010).

A second set of review factors, also scored from 0.0 to 4.0, relates to *Readiness for Dissemination*. This rating summarizes the extent and quality of available resources to support intervention implementation. Specific criteria include the availability of implementation materials (e.g., manuals, other written materials), availability of training and support resources including technical assistance or coaching, and availability of quality assurance procedures (e.g., protocols for collecting process data, monitoring of fidelity, supervision feedback).

Once a review of an intervention is completed, information is posted on the NREPP website. This includes a general summary of the intervention and the outcome measures that were reviewed by NREPP, summary ratings of the Quality of Research and Readiness for Dissemination, a list of the research studies and intervention materials that were reviewed, and contact information to obtain manuals and other materials about the intervention. NREPP suggests that treatment program officials review the materials and contact intervention developers before deciding whether to adopt the intervention. See Box 2.2 for a sample NREPP review.

Although a number of interventions have been designated in the earlier version of NREPP as evidence-based, or have their review findings listed on the current NREPP website, very few are focused on criminal justice populations. A search of the NREPP database using the NREPP search categories “substance abuse, correctional, crime/delinquency, drugs” identified seven interventions:

- *Forever Free* – Drug treatment in therapeutic community for incarcerated women.
- *Friends Care* – Aftercare program for probationers and parolees leaving mandated outpatient treatment.
- *Living in Balance* – Addiction treatment program emphasizing relapse prevention.
- *Moral Reconation Therapy* – Cognitive-behavioral intervention for inmates and other offenders that addresses moral reasoning.
- *Multidimensional Family Therapy* – Comprehensive family-based intervention for adolescents with substance abuse problems or co-occurring disorders.
- *Residential Student Assistance Program* – Substance abuse prevention program for high-risk youth who are placed in a residential facility, including juvenile correctional facilities.
- *Texas Christian University Mapping-Enhanced Counseling* – A communication and decision making technique to support treatment by improving client-counselor interactions.

Box 2.2 Example of an NREPP Review (Excerpted from <http://www.nrepp.samhsa.gov/ViewIntervention.aspx?id=118>)

Forever Free

Program description. Forever Free is a 4–6 month drug treatment program for incarcerated women. The intervention aims to reduce drug use and improve behaviors during incarceration and while on parole. During incarceration women participate in individual substance abuse counseling, special workshops, educational seminars, 12-step programs, parole planning, and urine testing. Topics include self-esteem, anger management, assertiveness training, information about healthy vs. dysfunctional relationships, abuse, post-traumatic stress disorder, codependency, parenting, and sex and health. After graduation and parole discharge, women may voluntarily enter community residential treatment which includes individual and group counseling as well as family counseling and vocational training/rehabilitation.

Outcome 1: *Drug use* (frequency of drug use over the past year and during the past 30 days) was measured using structured interviews. *Key findings:* In a study with 180 women 1 year after their release from prison, 8% of Forever Free participants reported drug use in the past 30 days, compared with 32% of the comparison group ($p=0.001$). A total of 50.5% of Forever Free participants reported any drug use in the past year, compared with 76.5% of comparison group participants ($p=0.001$).

Study designs. Quasi-experimental

Quality of research rating. 2.9 (0.0–4.0 scale)

Outcome 2: *Parole outcomes.* “Discharged/active with no return” was considered success. “Discharged/active returned to custody” and “in prison” were considered failures. *Key findings:* In one study, 68.4% of Forever Free graduates who entered residential treatment had not returned to custody 1 year after parole; 52.2% of Forever Free graduates who did not enter residential treatment had not returned to custody, while only 27.2% of women in a no-treatment comparison group had not been returned to custody ($p<0.05$). In a second study, 49.5% of Forever Free graduates compared with 74.7% of a no-treatment comparison group reported being arrested in the year following release from prison ($p=0.001$).

Study designs. Quasi-experimental

Quality of research rating. 3.2 (0.0–4.0 scale)

Readiness for dissemination ratings by criteria (0.0–4.0 scale)

(continued)

Box 2.2 (continued)

Implementation materials	Training and support	Quality assurance	Overall rating
1.3	0.5	0.5	0.8

Dissemination strengths

The program uses best-practice materials from a variety of expert resources targeted to this specific population. Some training materials are provided for topic areas relevant to the intervention. A client satisfaction survey and a standardized therapeutic community fidelity measure are provided to support quality assurance.

Dissemination weaknesses

The program materials are specific to one implementation site and may not be easily adapted or transferred to other implementation sites. The relationship between the submitted program materials is unclear. While implementation, program goals, and recommendations for staffing are addressed in some of the materials, the guidance across these materials is inconsistent. No support resources specific to the program and its implementation are provided. The connection between the quality assurance measures provided and the program model is unclear. Materials state that one implementation site was engaged in external quality reviews, but no standards or protocols for evaluation or quality assessment are provided.

2.5.4 Blueprints for Violence Prevention

Blueprints for Violence Prevention (*Blueprints*), is a program of the Center for the Study and Prevention of Violence at the Institute for Behavioral Science at the University of Colorado (Mihalic, Irwin, Elliott, Fagan, & Hansen, 2001). Since 1996, *Blueprints* has sought to identify and disseminate information about effective youth violence and drug prevention programs (<http://www.colorado.edu/cspv/blueprints/index.html>). Most of the funding for *Blueprints* comes from the U.S. Department of Justice’s Office of Juvenile Justice Prevention and Delinquency (OJJDP).

Two types of program designations are included: model programs and promising programs. *Blueprints* requires a rigorous review of the research by *Blueprints* staff, followed by external review and recommendation by an Advisory Board. To be certified, the intervention must demonstrate evidence of a deterrent effect on violence and recidivism based on a scientifically strong research design. Review categories include:

1. Evidence of deterrent effect (i.e., reduction in delinquency, violence, or drug use) with strong research design (RCTs, well-matched comparison group designs or

studies with good statistical controls for comparison group differences). Studies need to address issues related to sample size, sample attrition, and consistent and valid measures must be used.

2. Sustained effects defined by follow-up periods of at least 1 year posttreatment.
3. Multiple site replications including diverse settings and diverse populations increase confidence in the effectiveness of an intervention. At least *one replication* with demonstrated effects is necessary to be designated a *Blueprints* model program.
4. Two additional factors are considered: First, whether the program conducted analyses of mediating factors (i.e., whether the program changed a targeted risk or protective factor that mediated changes in delinquency or violence). Second, whether the economic benefits of the program outweigh the costs, and whether program costs are “reasonable.”

To be designated as a model program, a program must meet the first three of these criteria, while promising programs must meet only the first criterion. An important criterion is that the intervention must be studied by at least two researchers, of which one cannot be associated with the development of the intervention. This is a unique criterion compared to other synthesis processes. Given the relatively rigorous review criteria compared with other repositories, relatively few interventions have achieved this designation. Out of more than 900 programs reviewed to date, only 11 have been designated as *Blueprints* model programs, and 19 as promising programs. Two model and eight promising interventions are related to substance abuse prevention or treatment with youth at risk for delinquency.

Model programs:

- *Multisystemic Therapy*: intensive family-and community-based treatment addressing multiple determinants of serious antisocial behavior in juvenile offenders. MST targets chronic, violent, or substance abusing male or female juvenile offenders, ages 12–17, at high risk of out-of-home placement, and the offenders’ families.
- *Functional Family Therapy*: outcome-driven prevention/intervention program for 11- to 18-year-old youth at risk for and/or presenting with delinquency, violence, substance use, or conduct disorders. Intervention sessions are delivered to youth and their families in various settings.

Promising programs:

- *Behavioral Monitoring and Reinforcement Program*: a school-based intervention that helps prevent juvenile delinquency, substance use, and school failure for high-risk adolescents. This is a two-year program beginning in seventh grade and targets youth with low academic motivation, family problems, or frequent or serious school discipline referrals.
- *Brief Strategic Family Therapy*: a short-term (three months), problem-focused intervention emphasizing modification of maladaptive family interaction patterns. The target population is children and adolescents 8–17 years old at risk for behavior problems, including substance abuse.

- *CASASTART (Striving Together to Achieve Rewarding Tomorrows)*, formerly the Children at Risk (CAR) program: targets youth aged 11–13 in high risk environments, and aims to reduce exposure to drugs and criminal activity. The program targets individual, peer, family and neighborhood risk factors through case management services, after-school and summer activities, and increased police involvement.
- *Linking the Interests of Families and Teachers*: a school-based intervention to prevent conduct problems including antisocial behavior, involvement with delinquent peers, and drug/alcohol use. Targets first and fifth graders and their families living in at-risk neighborhoods with high rates of juvenile delinquency.
- *Preventive Treatment Program*: provides training for 7- to 9-year-old males and their parents to decrease delinquency, substance use, and gang involvement. Targets children from low socioeconomic families assessed as having high levels of disruptive behavior.
- *Project Northland*: a long-term, 6-year community-wide intervention designed to reduce adolescent alcohol use. The intervention is multilevel, involving students, parents, peers, community members, and organizations.
- *Strong African American Families (SAAF) Program*: a 7-week family-centered program for 10- to 14-year-olds designed to prevent alcohol use and abuse among rural African American youth and improve the parenting practices of their caregivers.
- *Communities That Care*: a coalition-based community prevention program using a public health approach to prevent youth problem behaviors such as violence, delinquency, school dropout, and substance abuse.

2.5.5 Washington State Institute for Public Policy

In 1983 the State of Washington Legislature created the Washington State Institute for Public Policy (WSIPP). The mission of WSIPP (<http://www.wsipp.wa.gov>) is to conduct research to support nonpartisan decision making by the Legislature to answer specific policy questions. Two key areas of expertise of WSIPP are criminal justice and health, and outside experts are also brought in to assist with different topical areas under review. Many of the Institute's research reports involve systematic reviews or meta-analyses of research evidence. A number of reports include benefit-cost analyses that inform legislative policy and funding decisions.

WSIPP criteria for designating interventions as evidence-based are based on and similar to the Maryland Scientific Methods Scale previously described, but extends the Maryland scale to include downward adjustments in estimated effect sizes based on lower methodological rigor (WSIPP only includes studies at level three or higher in its reviews; see Aos, Miller, & Drake, 2006). They also note that the effect sizes can be adjusted for fidelity problems. Additional adjustments to effect sizes are made for studies with relatively short follow-up periods, or where the researcher was involved in the development and implementation of the intervention.

The following reports related to substance abuse or treatment in the criminal justice system have been published by WSIPP and are available to the public on their website (<http://www.wsipp.wa.gov>):

- Evidence-based Treatment of Alcohol, Drug, and Mental Health Disorders: Potential Benefits, Costs, and Fiscal Impacts for Washington State (2006).
- Evidence-Based Public Policy Options to Reduce Crime and Criminal Justice Costs: Implications in Washington State (2009).
- Washington’s Drug Offender Sentencing Alternative: An Evaluation of Benefits and Costs (2005).
- Washington’s Drug Offender Sentencing Alternative: An Update on Recidivism Findings (2006).
- Drug Offender Sentencing Alternative (DOSA): Treatment and Supervision (2003).
- Washington State’s Drug Courts for Adult Defendants: Outcome Evaluation and Cost-Benefit Analysis (2003).

2.6 NIDA Principles of Effective Drug Treatment

The National Institute on Drug Abuse (NIDA) published two documents (<http://drugpubs.drugabuse.gov>) that promulgate a set of principles for providing effective addiction treatment. A general guide, *Principles of drug addiction treatment: A research based guide* was first published in 1999 and a second edition published in 2009 (NIDA, 2009). A similar document was developed for criminal justice populations, called *Principles of drug abuse treatment for criminal justice populations: A research based guide* and was published in 2006 (NIDA, 2006). Both reports are based on a consensus review of research findings that *did not* draw upon a rigorous systematic review or meta-analysis; this review reflects more of a consensus-driven summary of best practices in addiction treatment. In fact, only two of the principles (use of cognitive behavioral therapy and medication-assisted treatment) emanate from multiple RCTs, the others are considered good clinical or consensus-based principles or practices. These reports have been broadly disseminated to the public, researchers, practitioners, and policymakers, and therefore have had substantial influence on the development of state and federal policies toward addiction treatment standards. They even reflect performance measures for the field of addiction treatment, even though many of the principles have not been empirically validated.

NIDA (2009) identified 13 principles of effective addiction treatment:

1. *Addiction is a complex but treatable disease that affects brain function and behavior.* The effects of drugs on the brain continue long after drug use has stopped and account for relapse.
2. *No single treatment is appropriate for everyone.* Successful treatment outcomes require matching the intervention setting and services to an individual’s particular problems and needs.

3. *Treatment needs to be readily available.* Drug abusers should be linked to treatment as quickly as possible.
4. *Effective treatment attends to multiple needs of the individual, not just his or her drug abuse.* Effective treatment addresses a client's other health, social, legal, and mental health problems, and is appropriate to the client's age, gender, ethnicity, and culture.
5. *Remaining in treatment for an adequate period of time is critical.* Although the optimal length of treatment is dependent on the nature of a person's drug problems, a minimum of 90 days is needed to reduce or stop drug use. In general, the longer the length of treatment, the better the outcomes. Long-term recovery from drug addiction may require multiple treatment episodes over a long period of time. Treatment programs should incorporate interventions to keep clients in treatment.
6. *Counseling – individual and/or group – and other behavioral therapies are the most commonly used forms of drug abuse treatment.* Both individual and group counseling are needed to address various aspects of a client's clinical needs, such as motivation to stop using drugs, building resistance and relapse prevention skills, improving personal relationships, or providing incentives to maintain abstinence. Participation in group counseling and peer support programs during and following treatment can help maintain abstinence.
7. *Medications are an important element of treatment for many patients, especially when combined with counseling and other behavioral therapies.* Medication-assisted treatments such as methadone and buprenorphine are effective in helping those addicted to heroin or other opioids. Naltrexone is also an effective medication for some opioid-addicted individuals and some patients with alcohol dependence.
8. *An individual's treatment and services plan must be assessed continually and modified as necessary to ensure that it meets his or her changing needs.* Service needs may change over time and also include medical care, family therapy, parenting skills, vocational rehabilitation, or social and legal services. A continuing care approach indicates that treatment intensity and type should vary as a client's needs change.
9. *Many drug-addicted individuals also have other mental disorders.* Drug abuse disorders commonly co-occur with mental health disorders, so clients should also be assessed for the latter. For clients with co-occurring substance abuse and mental health disorders, integrated treatment approaches that address both conditions are needed.
10. *Medically assisted detoxification is only the first stage of addiction treatment and by itself does little to change long-term drug abuse.* Detoxification by itself is not effective for achieving long-term abstinence from drug use. Following detoxification, clients should be encouraged, using incentives or motivational enhancement techniques, to engage in treatment.
11. *Treatment does not need to be voluntary to be effective.* Contrary to common assumptions, clients who are coerced into treatment by family, employers, or the criminal justice system can do well in treatment. Coerced treatment can increase treatment engagement and retention and improve outcomes.

12. *Drug use during treatment must be monitored continuously, as lapses during treatment do occur.* Ongoing detection of relapse or changes in a client’s status can indicate a need to modify the treatment plan or increase the intensity or type of treatment.
13. *Treatment programs should assess patients for the presence of HIV/ AIDS, hepatitis B and C, tuberculosis, and other infectious diseases as well as provide targeted risk-reduction counseling to help patients modify or change behaviors that place them at risk of contracting or spreading infectious diseases.* Many drug abusers also are at high risk for infectious diseases. Assessment and prevention counseling can help clients reduce behaviors that put them at risk for these diseases, help prevent infection of others, and help maintain abstinence from drug use. Counseling can also help those who are already infected to manage their illness.

NIDA’s *Principles* identify several interventions as evidence-based. These include several pharmacotherapies or medication-assisted treatments for opiate or opioid dependence. *Methadone maintenance* treatment prevents opioid withdrawal, blocks the psychoactive effects of opioids, and decreases cravings. Methadone maintenance is most effective when combined with behavioral counseling and provision of medical, mental health, vocational, and family services as needed (McLellan, Arndt, Metzger, Woody, & O’Brien, 1993). *Buprenorphine* is a partial opiate agonist that reduces withdrawal symptoms without euphoria or sedative effects of heroin and other opioids. Since the Drug Addiction Treatment Act of 2000, physicians who have special accreditation can prescribe buprenorphine in their offices, for up to 100 patients. They must also be able to provide patient counseling or refer to counseling when indicated. Buprenorphine can be prescribed in its pure form (Subutex®), or more commonly in the form of Suboxone® (a combination of buprenorphine and the opioid antagonist naloxone). Suboxone® produces severe withdrawal symptoms when addicted individuals inject it to get high, lessening the likelihood of diversion. Office-based prescription of buprenorphine can be cost-effective and provide access to treatment for patients living in areas without community-based treatment options. Naltrexone is a long-acting synthetic opioid antagonist that blocks the euphoric effects of opioids, and is usually prescribed in outpatient medical settings or following detoxification. Naltrexone is not addictive and does not produce euphoric effects, but patient compliance can be difficult. It can be an effective treatment for highly motivated clients or those who are closely monitored such as probationers or parolees. Motivational incentives, such as contingent rewards, can improve treatment compliance and efficacy of naltrexone (Carroll et al., 2001; Preston et al., 1999).

The NIDA *Principles* also recognize several behavioral interventions as effective. These include *cognitive-behavioral therapy* designed to reduce relapse by teaching drug abusers skills to increase self-control and coping skills, recognize risky situations and other relapse triggers, develop coping mechanisms and alternative behaviors, and “unlearn” maladaptive behavioral patterns (Carroll, 1998; Carroll & Onken, 2005). The *Community Reinforcement Approach (CRA) Plus Vouchers*

intervention is an intensive 24-week outpatient therapy intervention (Higgins et al., 2003; Roozen et al., 2004). Twice weekly counseling sessions emphasize family relations, learning skills to minimize drug use, vocational counseling, and development of new recreational activities and social networks. Patients submit urine samples two or three times each week and receive vouchers for negative samples.

Contingency Management Interventions and Motivational Incentives have been found to be effective in a number of studies (Budney, Moore, Rocha, & Higgins, 2006; Higgins, Wong, Badger, Haug-Ogden, & Dantona, 2000; Prendergast, Podus, Finney, Greenwell, & Roll, 2006). Treatment clients earn low-value incentives (e.g., cash, prizes, movie passes, coupons) in exchange for producing drug-free urine specimens. Contingency management models increase treatment retention and abstinence, although long-term posttreatment effects after the incentives are removed are less certain.

Motivational Enhancement Therapy (MET) seeks to spur changes in clients to internally motivate them to stop using drugs and initiate treatment (Miller, Yahne, & Tonigan, 2003). MET includes an initial assessment session followed by 2–4 individual counseling sessions in which the therapist provides feedback on the assessment results and uses motivational interviewing techniques to build self-motivation for change. In general, MET seems to be more effective for engaging drug abusers in treatment than for producing changes in drug use, and appears to have larger effects for marijuana- or alcohol-involved individuals (Marijuana Treatment Project Research Group, 2004).

The *Matrix Model* targets stimulant abusers (e.g., methamphetamine and cocaine) to engage them in treatment (Rawson et al., 1995). Trained therapists guide the clients to understand addiction and relapse, and to attend 12-step groups and regularly monitor clients with urinalysis drug tests. Therapists are trained to conduct treatment sessions in a way that promotes the patient's self-esteem, dignity, and self-worth. The model emphasizes a supportive and nonconfrontational role for the therapist in an effort to build client–counselor alliance. The Matrix Model also incorporates aspects of relapse prevention, family and group therapies, and drug education. Other components of the model include family groups, recovery skills groups, relapse prevention groups, and social support groups.

Behavioral Couples Therapy (BCT) provides a therapeutic model for drug abusers and their partners, and is generally utilized as an addition to individual and group counseling (Fals-Stewart, O'Farrell, & Birchler, 2001). The model involves 12 weekly couple sessions, and incorporates an abstinence contract and behavioral principles to reinforce abstinence. Studies support BCT's efficacy with drug-abusing men and women and their significant others, resulting in greater treatment attendance, higher abstinence rates and fewer drug-related, legal, and family problems at 1-year follow-up (Fals-Stewart & O'Farrell, 2003; Fals-Stewart, Klostermann, Yates, O'Farrell, & Birchler, 2005; Winters et al., 2002).

Principles of drug abuse treatment for criminal justice populations: A research based guide. Recognizing that a substantial proportion of offenders have substance abuse disorders, and that the delivery of effective addiction treatment in the criminal justice system can be much more challenging than in standard community settings,

NIDA developed a research-based monograph summarizing key principles for effective treatment in the CJS. Building on the original set of NIDA treatment principles, this guide is based on a review of the research literature and consensus from experts in addiction research and practice. Most of the principles reflect what the field considers to be evidence-based *practice* or *principles* rather than specific programs. As with NIDA’s general treatment principles, some of these criminal justice treatment principles have a substantial research base, as well as being derived from what is considered effective clinical practice, but others have not been rigorously tested empirically.

Similar to NIDA’s general set of principles, there are 13 NIDA Principles for criminal justice populations; many overlaps occur between the two documents. For criminal justice populations, NIDA (2006) recommends the following (items marked with an * are different than the general NIDA treatment principles listed above):

1. *Drug addiction is a brain disease that affects behavior.* Drug abuse and addiction alter brain chemistry and anatomy and these changes can last for a long time following cessation of drug use. These brain alterations help explain why people continue to use drugs despite the negative consequences, and relapse is common even after periods of abstinence.
2. *Recovery from drug addiction requires effective treatment, followed by management of the problem over time.* For drug abuse treatment to be effective it must engage clients for a sufficient period of time, and multiple episodes of treatment may be required. Offenders in the community should be monitored for drug use and participation in treatment encouraged.
3. *Treatment must last long enough to produce stable behavioral changes.* This is especially true for offenders, who often have co-occurring mental health disorders and other social and health problems that can be addressed in long-term treatment.
4. *Assessment is the first step in treatment.* Offenders need a comprehensive assessment to determine the nature and extent of their drug problems, and identify other areas of need in order to set up an appropriate treatment plan. Assessments should include mental health evaluations with associated treatment planning.
5. **Tailoring services to fit the needs of the individual is an important part of effective drug abuse treatment for criminal justice populations.* Effective treatment addresses a client’s other health, social, legal, and mental health problems, and is appropriate to the client’s age, gender, ethnicity, and culture. Drug treatment for offenders should address issues of motivation and building skills for resisting drug use and criminal behavior.
6. *Drug use during treatment should be carefully monitored.* Drug use should be monitored through urinalysis or other objective methods, as part of treatment or criminal justice supervision, to determine treatment progress and form the basis for rewards and sanctions to facilitate change, and modify treatment plans.

7. **Treatment should target factors that are associated with criminal behavior.* “Criminal thinking” includes attitudes and beliefs that support a criminal lifestyle and criminal behavior. Cognitive skills training to help individuals recognize errors in judgment that lead to drug abuse and criminal behavior may improve treatment outcomes.
8. **Criminal justice supervision should incorporate treatment planning for drug abusing offenders, and treatment providers should be aware of correctional supervision requirements.* Offenders often have supervision and monitoring requirements that may conflict with treatment schedules. Thus ongoing coordination between treatment and criminal justice staff can encourage treatment participation and assure that correctional requirements are supported in treatment goals. Treatment and criminal justice staff should collaborate to evaluate each individual’s treatment plan to ensure that it meets correctional supervision requirements and other service needs, and facilitates transition from custody to community-based treatment and postrelease services.
9. **Continuity of care is essential for drug abusers re-entering the community.* Treatment outcomes are improved when inmates access continuing care in the community following release from incarceration. Continuation of treatment in the community is needed to sustain a process of therapeutic change begun in prison treatment and facilitate successful reentry to the community and continued abstinence and reduced criminal behavior.
10. **A balance of rewards and sanctions encourages prosocial behavior and treatment participation.* It is important to reinforce positive behavior for offenders in treatment. Nonmonetary “social reinforcers” such as recognition for progress or sincere effort can be effective, as can graduated sanctions that are consistent, predictable, and provide clear responses to noncompliant behavior. Graduated sanctions use lower-level sanctions for initial and less serious noncompliance, with increasingly severe sanctions for repeated problem behavior. It is important that offenders perceive rewards and sanctions as being fair, proportionate to the behavior, and clearly linked to the behavior.
11. **Offenders with co-occurring drug abuse and mental health problems often require an integrated treatment approach.* The high proportion of co-occurring mental health disorders among offenders suggests the need for an integrated approach that combines drug abuse treatment with psychiatric treatment, including the use of medication. Personality, cognitive, and other serious mental disorders can be difficult to treat and may disrupt drug treatment.
12. *Medications are an important part of treatment for many drug abusing offenders.* Medications such as methadone and buprenorphine for opioid addiction are evidence-based treatments and should be made available to offenders where appropriate, including those with co-occurring mental health problems. Behavioral strategies can increase adherence to medication assisted treatment.
13. *Treatment planning for drug abusing offenders who are living in or re-entering the community should include strategies to prevent and treat serious, chronic medical conditions, such as HIV/AIDS, hepatitis B and C, and tuberculosis.*

The rates of infectious diseases, including HIV/AIDS, hepatitis, and tuberculosis, are substantially higher among drug-involved inmates and offenders under community supervision than in the general population. Drug-involved offenders should be offered testing for infectious diseases and receive prevention counseling on strategies to reduce their risk behaviors. Probation and parole officers who monitor offenders with serious medical conditions should link them with appropriate health care services, encourage compliance with medical treatment, and re-establish their eligibility for public health services (e.g., Medicaid, county health departments) before release from prison or jail.

As indicated earlier, the above principles represent a combination of research-based evidence, guidelines for good clinical practice, and consensus opinions. Evidence-based interventions such as contingency management and medication-assisted treatment are incorporated in this set of principles, although sufficient research has *not* occurred in justice settings to assess the transportability of the treatments. These principles also recognize the unique treatment and service needs of offender populations, who present with criminogenic risk factors, high rates of co-occurring mental health disorders and infectious diseases, and the challenges of reentry into the community following incarceration.

2.7 Defining “What Works” in Community Corrections

For the past two decades the National Institute of Corrections (NIC) has been active in translating the research literature for the community corrections field and promoting EBP for community supervision (NIC, 2004). NIC developed a strategic approach to advance practice and learn about these implementation issues through a community corrections initiative that focuses on the sustainability of planned change and resource investment at the policy, procedural, and operational levels in several jurisdictions (NIC, 2004). The NIC model focuses on programs, organizational development, and collaborations with other organizations, and is analyzed and summarized in Chap. 6. In a cooperative agreement with the Crime and Justice Institute (CJI), a technical assistance and research organization, NIC began an initiative in 2002 to advance the use of evidence-based practices in select community corrections agencies. This initiative was modeled after previous efforts in the state of Maryland, referred to as Proactive Community Supervision (see Taxman, Shepardson, & Byrne, 2004; Taxman, 2008).

The first of these activities involved the development of materials to help the field understand the components of EBPs. In a 2004 report, NIC outlined the basic principles of evidence-based practices that were drawn from the existing literature on correctional principles (largely the work of Andrews and Bonta, 1998), meta-analyses of correctional interventions, and consensus from the field. These principles emanated from a consensus panel consisting of one academic and several practitioners in the field. These principles (see Box 2.3) are considered to be effective for reducing offender risk and recidivism.

Box 2.3 Eight evidence-based principles for effective interventions

1. Assess actuarial risk/needs using a standardized instrument(s).
2. Enhance intrinsic motivation.
3. Target interventions.
 - (a) *Risk Principle*: Prioritize supervision and treatment resources for higher risk offenders.
 - (b) *Need Principle*: Target interventions to criminogenic needs.
 - (c) *Responsivity Principle*: Be responsive to temperament, learning style, motivation, culture, and gender when assigning programs.
 - (d) *Dosage*: Structure 40–70% of high-risk offenders’ time for 3–9 months.
 - (e) *Treatment*: Integrate treatment into the full sentence/sanction requirements.
4. Skill train with directed practice (use Cognitive Behavioral treatment methods).
5. Increase positive reinforcement.
6. Engage ongoing support in natural communities.
7. Measure relevant processes/practices.
8. Provide measurement feedback.

Source: Crime and Justice Institute (2009)

For each of these principles, NIC has outlined procedures and detailed practices needed for implementation (Crime and Justice Institute, 2009). These recommendations recognize the difficulty and complexity of changing staff and agency culture and practice, and the multiple levels at which change may be needed. These include the case (or offender) level, agency level (including staff and agency leadership), and system (policymakers, funders, other agencies). NIC proposes seven guidelines for implementing effective interventions in community corrections settings:

1. Limit new projects to mission-related initiatives.
2. Assess progress of implementation processes using quantifiable data.
3. Acknowledge and accommodate professional over-rides with adequate accountability.

4. Focus on staff development, including awareness of research, skill development, and management of behavioral and organizational change processes, within the context of a complete training or human resource development program.
5. Routinely measure staff practices (attitudes, knowledge, and skills) that are considered related to outcomes.
6. Provide staff with timely, relevant, and accurate feedback regarding performance related to outcomes.
7. Utilize high levels of data-driven advocacy and brokerage to enable appropriate community services (Crime and Justice Institute, 2004:14).

NIC also recognizes that simply disseminating information of evidence-based principles of community correctional supervision is insufficient for achieving meaningful changes in supervision and management practices (Crime and Justice Institute, 2004). Accordingly, NIC published documents about the need for organizational change and development in correctional agencies and the importance of collaboration across agencies and systems, as described in more detail in Chap. 6. In addition, NIC built a technical assistance program, focused on disseminating information about EBPs and guidance on how to implement EBPs. Intensive efforts were devoted to four community corrections agencies to educate and train agencies about these EB principles and practices (see Chap. 6 for more details).

Although useful for framing the importance (as well as difficulty) of implementing evidence-based practices and principles, the eight NIC principles have somewhat limited benefits for improving delivery of addiction treatment for offenders under community supervision. First, no specific interventions to change offender behavior are proposed. For example, the common acceptance of the EBP cognitive behavioral therapy or contingency management is not endorsed. Second, the evidence-based principles represent a combination of consensus-driven factors that have not been rigorously tested; the list also represents complex ideas that may not be appropriate for all offenders in all settings, and includes relatively vague constructs. Thus, operationalizing these principles requires an innate understanding of the research literature in order to translate the broad concepts into operational practice. This could be a complex, lengthy, and difficult process that is likely to result in inconsistent and ineffective implementation without extensive technical assistance, monitoring, and coaching. It is not clear how these principles may interact with each other in real settings, what is the optimal timing for implementation, or which of the principles are most important to improve outcomes for offenders. For example, how and when should positive reinforcement be given to offenders in the context of cognitive behavioral treatment? This is a question that does not have a research basis, as of yet.

2.8 Standards of Evidence in Community Corrections and Addiction Treatment

A challenge for the community corrections field (and perhaps the criminal justice system in general) is to balance the need for rigorous scientific evidence and fidelity to the intervention with the need to incorporate real-world clinical experience. This includes modifying an intervention once it is implemented in real-world criminal justice settings. In addition, unlike carefully controlled research settings, treatment participants under community corrections supervision may self-select or be mandated into treatment that may or may not be appropriate for their type or severity of drug abuse problem. This complicates and may undermine the delivery of effective treatment. The targeting of offender needs with appropriate services is a major issue.

As discussed earlier, the challenges of summarizing evidence and determining what interventions should be identified as “evidence-based” include: (1) quality of research design; (2) internal and external validity; (3) publication bias; (4) generalizability from research in controlled settings to implementation in community settings; (5) differences between statistical significance and clinical significance; (6) organizational issues; and (7) economic issues. A more thorough discussion of these issues is provided in Chap. 8. It can be difficult to implement RCTs in criminal justice settings, and such designs are associated with a potential lack of external validity (generalizability) because the conditions to conduct the RCT need to be so carefully controlled that they may not reflect real-world conditions for delivering the intervention. Because of these challenges, there are relatively few treatments that have been designated EBPs based on multiple RCTs. National review efforts such as the Campbell Collaboration and NREPP have helped to fill the void by providing a process for conducting such efforts, including systematic reviews.

But the knowledge development process is different than the knowledge utilization process. It is in the utilization process where TT becomes very important, and where researchers and practitioners can and should merge their efforts. The components of EBP have been defined and will continue to be defined based on research. But the translation of these *laboratory-based* EBPs into action involves utilization of a different scientific process (implementation science) that is also laden with rigor and methodological steps (Fixsen et al., 2005). These processes must be more dynamic in that: (1) there is a need to make decisions quickly; (2) public safety concerns exist; (3) decisions about jail or prison overcrowding must be made; (4) agencies must respond to court orders to provide treatment; (5) treatment resources are limited, especially for intensive or long-term treatment; or (6) civil rights or due process concerns exist. Under these conditions, it may be possible to develop less rigorous review criteria and procedures, provided that these procedures are transparent, systematic, and objective. Of course, it is important to guard against the dangers of implementing *quick fixes* that circumvent a systematic TT process; the latter is much more likely to lead to more effective and sustainable changes in organizational and staff culture, attitudes, and performance.

Accordingly, a key challenge for identifying EBPs that *are salient for the field and community corrections populations* and can be *realistically implemented with fidelity and sustainability* is maintaining scientific rigor while recognizing the real need to implement new programs and practices with relatively little lead time. To do this successfully requires that: (1) systems, organizations, and staff have the foundation and knowledge development in place; and (2) agencies are positioned and their staff trained to conduct evidence-based assessment, performance monitoring, regular program adjustments and outcomes monitoring, and collection of appropriate outcome information. Researchers, for their part, have to learn to focus on what is important for practitioners and policymakers. These and related issues are discussed in depth in Chap. 8.

Another challenge for defining, identifying, and disseminating EBP for the field is encouraging professionalism that is respectful of research and data. National practitioner associations and corrections training academies should include basic training on understanding research and scientific principles (part of improving organizational readiness to change) and training on substance abuse and treatment as part of standard curricula. Organizational leaders and staff need to accept the idea of program evaluation as a key part of improving outcomes. Improvements are also needed in dissemination and utilization of research findings. A challenge is to overcome skepticism among practitioners and policymakers about research. In part this skepticism reflects that researchers do not always provide information that is useful and digestible, and because research evolves and is couched in equivocal terms. This places an onus on researchers to prepare user-friendly documents that summarize research findings in more user-friendly ways.

2.9 Conclusions

In this chapter we have highlighted the various processes to identify evidence-based practices. This primarily focuses on the study methods and quality, and the consistency of the findings. The specific intervention or practice needs of the field are usually secondary to the general selection process for EBPs, although NREPP does consider the readiness for dissemination in its rating process.

The Research to Practice Dilemma. Although achieving the *gold standard* of rigor in EBP review is important for maintaining necessary scientific rigor and assuring validity, there is a price to pay. The higher one moves on the scale of scientific rigor, the more time consuming and expensive the research, and the more narrowly defined the target population. In addition, implementation (e.g., training costs, fidelity monitoring) may be more costly, thus affecting transportability to real-world settings. Rigorous RCTs are important but these limits are the reason why there may be a need for other types of evidence to be included in the systematic review processes. Although there may be pressures for less rigorous criteria for determining the evidence base because of political or operational pressures to implement new programs quickly, a danger exists because the resulting program may not

generate positive findings across multiple settings. Such adapted interventions may lack internal validity (i.e., credibility of the findings within the study sample), sustainability, and effectiveness once implemented in multiple settings. No matter what the evidence base, implementation of an ineffective substance abuse treatment also carries with it serious implications for cost, public safety, and increasing negative attitudes toward treatment by corrections personnel.

EBP designated through systematic reviews and EBP repositories may require a tightly administered protocol, but implementation in the real world may require clinical adaptation by practitioners. Realistically, even where rigorous scientific evidence has determined that an intervention is evidence-based and effective, the intervention is frequently altered when implemented in nonresearch, real-world settings. The resulting intervention is generally a product of a number of external, system, organizational, and staff factors that come into play to determine whether the research-based intervention will actually be implemented in the appropriate setting and with the appropriate population. Although it is important that clinical and other staff must view the EBP as acceptable and feasible in the first part of implementation, attention also needs to be given to how the EBP is adopted, implemented with fidelity, and sustained. Economic factors are also important: an EBP that requires expensive training, fidelity monitoring, or highly paid staff may not be sustainable, given the pressure for low-cost alternatives and the dearth of support for treatment. The intervention effect may vary by client characteristics, setting, or risk level, so if the EBP is delivered to the wrong population or in the wrong context it may no longer yield positive findings.

Implementation Issues are Important. The designation of an intervention, program, or practice as evidence-based is the first step. But, the transfer from evidence to practice, the technology transfer process, requires effective *implementation* of an *effective* intervention, encompassing both EBP and a systematic implementation process. Without both the EBP intervention and a systematic implementation process, positive client outcomes are unlikely to be achieved. Ineffective programs can be implemented well, and effective programs can be implemented poorly (Fixsen et al., 2005). *Positive client outcomes are achieved only when both the intervention and implementation practices are effective.* The question to be addressed is how to improve implementation effectiveness.

Organizational and implementation research suggests that identifying evidence-based practices and programs that yield positive client outcomes is only the first stage in improving health services for drug-involved offenders. If addiction treatment is to have positive effects on client outcomes, an effective intervention is necessary but *not* sufficient; the intervention also has to be implemented well and with fidelity (Fixsen et al., 2005). Evidence-based interventions are slow to be disseminated (Kilbourne, Neumann, Pincus, Bauer, & Stall, 2007), and are often poorly implemented (Bourgon & Armstrong, 2005) or difficult to sustain (Brown & Flynn, 2002; Miller, Sorensen, Selzer, & Brigham, 2006). There are particular challenges in introducing evidence-based practices and programs into criminal justice agencies (Farabee et al., 1999; Linhorst, Knight, Johnston, Trickey, 2001), given that federal government research funding is limited and few government agencies assist with

helping the field integrate research into practice. Significant system barriers relate to cyclic funding, vacillating support for offender programs, and a focus on security and punishment, not treatment. Current implementation practice in criminal justice drug treatment hinders effective implementation: target populations are inappropriate; staff evaluations are not performance-based; organizational accountability for outcomes is nonexistent; there is high staff turnover; resources for implementation activities are lacking; and few incentives are provided to enhance program effectiveness (Taxman & Bouffard, 2000, 2002; Welsh & Harris, 2008).

TT and implementation are challenging and complex processes, requiring a guiding conceptual framework and sustained and empirically supported approach to achieve successful results. It is important to identify the core influences on and specific components of implementation, to understand how the implementation process affects movement of evidence-based practices and programs toward sustainability, and to study how implementation interventions can improve the implementation process and outcomes. In Chap. 9, we provide such a TT framework that considers the unique challenges of community corrections and addiction treatment agencies.

Preparing the Field to Implement. Another important lesson from implementation and organizational change research is that traditional dissemination, training, and implementation strategies (e.g., one-time training, dissemination of information only, implementation without changing staff roles, no assessment of organizational readiness) are often ineffective. In a meta-analysis of effects of different training levels on implementation, training demonstration alone produced skills acquisition in only 20% of teachers, practice and feedback techniques increased skills acquisition to 60% but resulted in little classroom use (Joyce & Showers, 2002). Only with the addition of on-site coaching were practices actually implemented in the classroom (95% using the practice). Thus, multistage training components which include coaching and consultation *in the practice setting* increase the likelihood of proper implementation of evidence-based practices and programs and thus more effective TT. A recent meta-analysis of training found that effective strategies should have three phases: (1) knowledge dissemination; (2) mapping to the business process; and (3) strategic implementation (Burke & Hutchins, 2007). A deeper discussion on these factors will be presented in Chap. 4.

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