What Is Evidence-Based Practice?

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Evidence-based practice (EBP) is a new, comprehensive model of health care that provides guidance for other human services as well. The concept of EBP is subject to considerable misinterpretations, as those invested in the status quo attempt to distort this new and growing movement into existing practices. By drawing on the original source handbook, *Evidence-Based Medicine: How to Practice and Teach EBM*, this article describes what EBP really is, what its major steps are, and what its implications are for the delivery of brief treatments and crisis interventions. [*Brief Treatment and Crisis Intervention* 4:167–176 (2004)]

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What Is Evidence-Based Practice?

Evidence-based practice (EBP) is receiving considerable attention within the general field of human services and within the disciplinary literatures of specific professions, such as medicine, psychiatry, psychology, social work, marital and family therapy, chiropractic, and nursing, among others. Although it may be premature to label this movement a revolution, it is evident that something serious is afoot, as well as something compellingly different from precursor initiatives.

Various perspectives are associated with EBP, including such terminology as *empirical, science-based, evidence, practice guidelines, systematic reviews, meta-analyses, Cochrane Collaboration, Campbell Collaboration, empirically supported treatments,* and so forth. It is the purpose of this article to set forth, as clearly as possible, the essential features of real evidence-based practice and to relate this movement (whether enduring or not) to the subject matter of this journal, brief treatment and crisis intervention.

The current magnum opus of evidence-based practice is the second edition of the book aptly titled *Evidence-Based Medicine: How to Practice and Teach EBM,* by Sackett, Straus, Richardson, Rosenberg, and Haynes (2000). In it, evidence-based medicine is simply defined as ''the integration of best research evidence with clinical expertise and patient values'' (p. 1). Definitions are provided for *best research evidence, clinical expertise,* and *patient values;* and the authors claim that ''when these three elements are integrated, clinicians and patients form a diagnostic and therapeutic alliance which optimizes clinical outcomes and quality of life'' (p.

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1). They explicitly note that EBP is not a static state of knowledge but rather represents a constantly evolving state of information: ''New evidence from clinical research both invalidates previously accepted diagnostic tests and treatments and replaces them with new ones that are more powerful, more accurate, more efficacious and safer'' (p. 1). Thus, practitioners continually have an obligation to keep themselves abreast of these developments in clinical research and to incorporate such developments into daily care.

To conduct EBP, one needs to perform the following five steps:

1. Convert one's need for information into an answerable question.
2. Track down the best clinical evidence to answer that question.
3. Critically appraise that evidence in terms of its validity, clinical significance, and usefulness.
4. Integrate this critical appraisal of research evidence with one's clinical expertise and the patient's values and circumstances.
5. Evaluate one's effectiveness and efficiency in undertaking the four previous steps, and strive for self-improvement.

It is worth noting (somewhat ironically) that evidentiary support is almost nonexistent for the assertion that EBP improves clinical outcomes, although some preliminary tests do corroborate the hypothesis (Faul, McMurtry, & Hudson, 2001; Slomin-Nevo & Anson, 1998). However, the face validity of EBP is by itself sufficiently compelling to convince most practitioners that the approach has clear merit and is worth testing in the context of routine clinical care. Let's review the five steps in a little more detail.

Step 1: Convert One's Need for Information Into an Answerable Question

An answerable question simply involves a question root that combines a word such as *who, what, where, when, how,* or *why* with a verb and a disorder or some other client circumstance. Examples of answerable questions include the following:

- What brief treatments are most effective in alleviating the symptoms of post-traumatic stress disorder?
- What are the effects of critical-incident stress debriefing on clients exposed to terrorist acts?
- Is EMDR more effective than cognitive-behavioral treatment in treating adult survivors of childhood sexual abuse?
- What is the validity of using anatomically correct dolls in the identification of children who have been sexually abused?
- Does journaling help elicit the repressed memories of real episodes of childhood sexual abuse that were consciously forgotten?

To be sure, answerable questions are those that are at the forefront of the concerns of practicing clinicians. They are both practical and (at least potentially) answerable, and the answers will have meaningful applications to treatment.

Step 2: Track Down the Best Clinical Evidence to Answer That Question

Books and Journals. It is sad but true that the conventional resources most of us relied on in graduate school are now relatively thin reeds on which to base practice decisions. Not only books but even professional journals can be years out of date by the time they see print. For example, it is not uncommon for articles appearing in social work journals to be published

some three or four years following their date of submission. It also turns out that the majority of articles published in journals do not provide answers to answerable questions. A relative minority of articles either report the results of empirical evaluations of practice in the human services or detail studies on the reliability and validity of assessment methods. Among the more disciplinary outlets that do focus on publishing evidence-based articles are the journals *Archives of General Psychiatry, Brief Treatment and Crisis Intervention, Journal of Consulting and Clinical Psychology, Research on Social Work Practice,* and *Evidence-Based Mental Health*. EBP suggests that these more pragmatic journals be consulted more often than those disciplinary outlets that focus on theory testing or on knowledge development for its own sake.

Books (especially textbooks) usually rely published journal articles and are even more stale in terms of providing genuinely contemporary information relevant to researching answerable questions. Fortunately, one can turn to several particularly reliable Web-based resources for information on answering answerable questions, namely, the Web sites maintained by the Cochrane Collaboration and the Campbell Collaboration.

World Wide Web. The Cochrane Collaboration, founded in 1992, is an international group of clinical researchers who, among other activities, are dedicated to designing and conducting systematic reviews of well-crafted scientific literature that deals with issues related to the assessment and treatment of various health problems, including mental health issues. Similar in scope and method is the Campbell Collaboration. Founded in 2000, it focuses on the fields of social welfare, education, and criminal justice. Social workers interested in learning about the most up-to-date information pertaining to the assessment and treatment of various health matters can turn to the Cochrane Collaboration Web site (www.cochrane.org) and the Campbell Collaboration Web site (www.campbellcollaboration.org.) for analogous research findings pertinent to social welfare, with systematic reviews that are periodically updated.

Evidence-Based Practice Guidelines. Evidence-based practice guidelines (PGs) consist of the concrete and specific steps needed to implement various interventions (medical or psychosocial) that credible research indicates are first-choice treatments for particular problems or areas of concern. PGs are also referred to as *practice protocols, treatment algorithms,* or *clinical pathways*. PGs have been around in various forms for decades, but the past ten years or so have seen an explicit interdisciplinary commitment to develop these in a manner consistent with the highest canons of scientific research. They are available for all major mental-health problems; for the field of substance abuse; and for an array of additional areas closely relevant to social work practice, such as physical or sexual abuse. (See Howard & Jensen, 1999, for a special issue of the journal *Research on Social Work Practice* that was devoted to the topic of practice guidelines and for which they guest-edited; see also, Rosen & Proctor, 2003.)

Some practice guidelines are discipline-specific—for example, those targeting practitioners in health care, with a set of practice guidelines for the delivery of intravenous therapy. But the best guidelines are those that are interdisciplinary in both audience and literary sources. Few psychosocial problems are the unique purview of a single discipline. Clients who are depressed, for example, are provided care by psychiatrists, social workers, psychologists, marriage and family therapists, counselors, and so forth. Research on effective treatments for depression has been conducted by practitioners in many disparate fields, and it

would be the height of foolishness to devise a so-called practice guideline that drew solely on the research contributions authored by members of a single discipline. Rather, the developers of PGs would be better advised to seek out, critically evaluate, and include all relevant scientific investigations, regardless of the disciplinary affiliations of the authors. Similarly, it would make no sense to provide, say psychologists, with PGs that offer guidance on treating clients with panic disorders; to provide a separate set of PGs for social workers focused on the same clinical problem; and yet to offer another set for nurses, psychiatrists, marriage and family therapists, and so on. Problem-focused interdisciplinary PGs that do draw on interdisciplinary-derived research and that are aimed at multiple types of practitioners are available and should be familiar to practitioners active in diverse fields.

Step 3: Critically Evaluate That Evidence

In science, information derived from certain forms of systematic inquiry is given greater credence than other forms. Although this does not completely avoid mistaken conclusions, it does render erroneous knowledge more detectable, and it reduces the chances that serious errors will be perpetuated. In the long run, errors created on the basis of systematically conducted and published research can be uncovered when efforts to replicate a finding become unavailing. In general, a finding that cannot be replicated by other researchers tends to be dismissed by the scientific community. What follows is a review of the types of evidence that can help to produce answers to answerable questions, beginning with the lowest level of research evidence and moving up the hierarchy of credibility.

Anecdotal case reports enjoy a long and justifiably venerable history as a valued method of research inquiry, a method especially valuable in the initial stages of investigating answerable questions. Simply put, a clinician who is providing care to clients makes a novel or replicative observation regarding etiology, diagnosis, or response to treatment. This can be written up as a letter to the editor in a professional journal, as a stand-alone article, or perhaps even as an entire book. Sigmund Freud, for example, authored a number of books based on his individual cases, helping to establish an entirely new field based, in part, on anecdotal case reports. Such observations derived from routine clinical care can indeed report legitimate conclusions. For example, say the first published report on a given antibiotic finds that its administration seemingly produced rapid relief and cure for a patient with a known bacterial illness, leading the author to conclude that this new antibiotic helps to cure this disorder. If said drug really does cure this illness, then this case report has yielded a true conclusion. What case reports do not do is provide sufficiently strong evidence to sort out erroneous conclusions from valid ones. Some problems remit with the simple passage of time (e.g., certain types of stress reactions), have varying courses, or readily respond to placebo influences. It is easy for a clinician to be deceived in the face of an apparently positive response. Its inherent inability to sort out valid conclusions from invalid ones is a serious limitation of anecdotal case reports' producing legitimate conclusions.

Correlational studies can also be quite compelling. For example, a strong correlation exists between smoking and the incidence of lung cancer, which has lead science to conclude, with other evidence, that smoking increases the risk of cancer. But correlational associations can also produce inaccurate causal inferences. Say that it has been determined that the incidence of reported rapes is positively correlated with the sales of ice cream cones in a given community. One would not want to conclude that

the consumption of ice cream causes sexual assaults. What is more likely operative is some third variable, as in time of year or outside temperature (reported rapes do decline during colder months). Again, correlational studies can assist in deriving correct inferences, but such studies must be interpreted cautiously.

Single-subject research designs (N-of-1 trial) are exceedingly useful in evaluating the effectiveness of treatments when one has access to a limited number of clients. This approach has only two prerequisites. The first is that the client's situation or problem must be amenable to repeated, reliable and valid assessment. The second is that the clinician must repeatedly assess the client's problem or situation using this valid measure. If this is done during and after treatment, one can confidently conclude whether a client has changed, at least along the dimensions measured. If this is done before, during, and after treatment, one can make tentative conclusions regarding the client's response to treatment, particularly if the pretreatment, or baseline, measures are stable and long-standing. If circumstances permit or dictate that treatment be introduced and removed, and if a client's functioning is observed to systematically co-vary with the implementation and removal of treatment, then one may make legitimate causal inferences regarding treatment effects in this one client. If one can replicate a finding across a number of clients who have the same problem and who receive the same intervention, then the generalized conclusion is strengthened—for example, *This intervention is effective for many clients with this problem, not just the first one*.

Suppose a client meets the criteria for posttraumatic stress disorder (PTSD). A valid measure of PTSD symptoms is completed weekly. After several weeks, the client receives some form of formal treatment (an antianxiety drug, a psychosocial intervention, etc.), and within two weeks, symptoms dramatically decline. Owing to the vicissitudes of therapy, the treatment is stopped after two weeks. During the next two treatment-free weeks, symptoms exacerbate to baseline levels. If treatment resumes and symptoms promptly decline, then this pattern of response can be quite compelling in arguing that the new treatment is causally responsible for improvements. But other potentially confounding factors (such as placebo responses) preclude a completely uncritical acceptance of the conclusion that the treatment caused the changes. Nevertheless, *N*-of-1 trials can be a quite useful way to systematically evaluate the effects of interventions with individual clients (see Barlow & Hersen, 1984; Thyer, 2001b).

Uncontrolled clinical trials involve validly assessing many clients one or more times before providing them with an intervention; in other words, clients are assessed during the pretest (designated as *O1*) before beginning the intervention (designated as *X*). They are assessed again after treatment (known as the *posttest,* or *O2*), using the same approach as before. Simple inferential statistics are usually used to evaluate changes in the aggregated level of a client's functioning, comparing posttreatment assessment scores with the pretreatment measures. Schematically, this can be depicted as an *O1-X-O2* group research design, and this approach is extremely useful both at documenting client changes in large groups and in testing the hypothesis of whether clients changed or were harmed by exposure to treatment. Again, a wide array of potentially confounding factors—such as the passage of time, the placebo responses, a desire to please the assessor, and so on—usually prevent one from concluding that the specific *X* caused the clients to improve. Nevertheless, initial investigations into new treatments are often tested in a research program using the *O1-X-O2* designs.

Quasi-experimental controlled clinical trials attempt to compare the functioning of clients

exposed to differing treatment conditions. Say an agency assigns some clients, based on the availability of clinical resources, to short-term treatment provided one-to-one and assigns other clients to the same short-term treatment but delivered in small groups. Sometimes, as in this example, two different genuine treatments can be compared in this approach. Other times, real treatment can be compared to a wait-listing condition or to an entirely different treatment. If clients assessed at pretest are functioning equivalently, some then get treatment X and others get treatment Y; and if it is found at posttest that those who received X have improved more that those who got Y, then the tentative conclusion is that X is a more effective treatment than Y. If those who received X are functioning equivalently posttest to those who got Y, then the tentative conclusion is that X and Y are equivalent therapies. Such conclusions are at best tentative, however. There may be some reasons why clients were assigned to differing treatments, and it may be these reasons that explain why outcomes differ, not the differences in how X and Y affect clients (see Cook & Campbell, 1979).

In an *individual randomized controlled clinical trial* (RCT), large numbers of clients with similar problems are randomly assigned to differing conditions, say X and Y, following a pretest. Using random assignment to determine what treatment a client receives helps to control for systematic differences between the characteristics of the two groups. If posttreatment assessment finds that the clients who received X have enhanced functioning relative to those who received Y, then a relatively stronger conclusion can be make as to whether X is a better treatment than Y. More complicated variations of RCTs can randomly assign clients to a no-treatment condition; a placebo treatment condition; or to a number of alternative, legitimate treatments. Follow-up assessments conducted over longer periods of posttreatment can be used to test the durability of improvements. Other methodological refinements involve using strong and comprehensive outcome measures; having assessments conducted by individuals unconnected with the delivery of service and unaware (or ''blind'') to the treatment condition the client was assigned to; and, in really well-done RCTs, selecting clients for overall participation in the study using some form of random selection from a larger population of interest (although this is rarely possible). RCTs are obviously more ambitious and usually much more expensive than other ways to investigate answerable questions, but they do permit stronger conclusions.

It is not uncommon for a new treatment to be investigated by a given researcher or by a research team closely associated with the development of the new treatment. This occurs with pharmacological treatments (e.g., by scientists funded by drug companies) and in psychosocial treatments (e.g., by practitioners who develop, market, and provide expensive training programs in the new intervention). Thus, it is important that any conclusions derived from a single RCT be replicated by independent scientists with no financial or personal investment in the new treatment, ideally through the use of a *multi-site randomized controlled clinical trial*, using several independent research teams located at different centers across the country (or even involving multiple countries) and involving diverse client populations. If conclusions based on a single RCT holds up to such strenuous testing, then this is pretty much as good as it gets in terms of having confidence in an answer to an answerable question.

Sometimes, however, multiple RCTs produce disparate results, clouding the ability to make a firm conclusion; or the RCTs are uneven in terms of quality, perhaps owing to an array of outcome measures or a relatively small samples of clients. As RCTs pertinent to answering an answerable question accumulate, the ultimate

research analysis becomes possible, an approach known as a *systematic review* (SR). In an SR, independent and unbiased researchers carefully search for every published and unpublished report available that deals with a particular answerable question. These reports are then critically analyzed, and—whether positive or negative, whether consistent or inconsistent—all results are assessed, as are factors such as sample size and representativeness, whether the outcome measures were valid, whether the interventions were based on replicable protocols or treatment manuals, what the magnitude of observed effects were, and so forth. Differential weight is usually given to RCTs, as opposed to the less-rigorous research methods. In some circumstances, a quantitative form of the SR can be applied. Better known as the statistical approach called *meta-analysis* (MA), this method can be used to mathematically aggregate the results obtained across separate outcome studies using differing outcome measures. Typically, MAs include only RCTs, and they ignore findings based on other forms of research (e.g., quasi- and pre-experimental outcome studies; correlational, single-subject, and anecdotal case studies). Systematic reviews, however, do usually include these latter forms of research.

This hierarchy of preference research methodologies is admittedly not uncontroversial (Priebe & Slade, 2002). Some believe that the epistemological privileging of RCTs and SRs is unjustifiable, given the supposedly evanescent nature of human relationships and the view that these methods form too blunt an instrument to investigate human affairs. But the alternatives proposed, usually some form of qualitative inquiry, possess their own disadvantages, and arguments remain generally unconvincing.

The Cochrane Collaboration and Campbell Collaboration Web sites are among the best sources for clinicians to locate contemporary systematic reviews and meta-analyses, as are the Web sites Centre for Evidence-Based Medicine (http://www.cebm.net) and PubMed (produced by the U.S. National Library of Medicine, http://www.ncbi.nlm.nih.gov/PubMed).

Step 4: Integrate This Critical Appraisal of Research Evidence With Clinical Expertise and Client's Values and Circumstances

Let us suppose that you have searched and located the available systematic reviews, meta-analyses, and RCTs dealing with effective methods to treat clients with serious depression. Let us suppose further that you have uncovered five evidence-based interventions—namely, selected pharmacological agents, cognitive-behavioral treatment, cognitive therapy, interpersonal psychotherapy, and behavior analysis. Let us further stipulate that all seem to produce roughly equivalent long-term results. EBP suggests that you obtain the training and clinical expertise to effectively deliver at least one of these interventions, for even the nonphysician mental health professional needs to be familiar with not only the circumstances indicating the need for medication but also the signs and symptoms of the medication's various agents (including the symptoms of overdose), inasmuch as clients may often be on concurrent drug therapy. Options include participating in stand-alone training workshops, attending professional conferences that offer such training, returning to graduate school, and (if still a student) asking that the program provide training for evidence-based interventions (in fact, this is now an accreditation requirement of professional training programs in clinical and counseling psychology, as well as a somewhat less-stringent expectation of graduate social work training). You may also opt to obtain suitable supervision from a practitioner qualified in the delivery of the evidence-based intervention. It is generally not realistic to try

to learn to acquire sophisticated clinical skills from independently study.

Your past training may provide you with some edge in terms of learning selected EBP. For example, interpersonal psychotherapy (IP) draws more from psychodynamic theory than from learning theory, and if your background is strong in psychodynamic therapy, then IP may be a more congenial approach for you to learn. Conversely, those knowledgeable in learning theory would likely be able to more readily acquire skills in behavior analysis or cognitive-behavioral treatments. Again, this assumes that these differing approaches enjoy a similarly strong evidentiary foundation.

Integrating your own skills in EBP with the client's values and preferences can begin with describing the treatment options you are capable of providing, with estimates of duration and cost and of the commonly encountered effects and side effects. This, of course, is approached cautiously, with no pretense of making any form of promise regarding individual outcomes. Often a useful practice is to provide clients with written descriptions of these treatment options, perhaps for them to take home and review at leisure or to discuss with others before scheduling a follow-up session with you. Potential medication treatments carry their own considerations. Some types of medications cannot be taken concurrently, and side effects can often be adverse, not minor. Referral options are also important to present. For example, suppose that your client expresses a strong preference for insight-oriented psychotherapy, yet your critical appraisal of the research reveals no scientifically credible evidence that this approach helps clients like yours. If evidence-based alternatives are available, then it would be unethical for you to provide such a non-evidence-based treatment. You would be obliged to provide the client with accurate information about treatment alternatives; at best (and even this may be ethically questionable), you could offer to refer the client to a practitioner who provides insight-oriented psychotherapy.

There is nothing within EBP that is at variance with the ethical standards of the various helping professions. EBP does not insist that scientific considerations be the only factors given weight when deciding on a choice of treatments. What it does insist is that such considerations be considered within one's clinical expertise and with the client's values and preferences in mind. There is very little role for authority that is unsubstantiated by credible scientific evidence; theoretical considerations are also minimally considered, in favor of empirical ones.

Step 5: Evaluate One's Own Effectiveness

Clearly, the more experience you gain in EBP, the less time you need to spend investigating the evidence. For instance, if you followed the steps outlined here to care for a depressed client last month, it will require less effort to search the literature for significant updates and developments applicable to a depressed client seen today. Once you have located and acquired the skills to validly access client functioning in a given area (and perhaps kept on file the pencil-and-paper rapid assessment instruments most useful in that area), then that is work that need not be repeated with each new case (although periodically consulting the literature for updates is of course important). To the extent that your practice focuses on one or on a few circumscribed clinical problems, you will find that it becomes more feasible to develop in-depth skills in evidence-based assessment and intervention. As EBP develops, the concept of the generalist practitioner becomes a less-feasible undertaking, as highly specific interventions requiring detailed and intense training focused on particular problems demand more and more of clinicians' time.

You need to evaluate not only your ability to provide evidence-based interventions but also your skills in searching the scientific literature to research answerable questions. It also is really crucial that practitioners be able to read, understand, and critically evaluate published research studies. The world is fraught with bogus therapies and exaggerated claims, and the best protection from being duped by the charlatans and self-deceived is in your own ability to assess the evidence made in support of assertions regarding effective treatments. Personal testimonials by the financially invested (e.g., the purveyors of expensive continuing-education programs) are a weak foundation for the practitioner seeking to be guided by evidence-based knowledge. Rather, the important skills include understanding what constitutes an acceptable outcome measure, knowing what the characteristics are of an internally valid research design, and finding a replicable treatment protocol.

Considerable attention has been paid in the social work, psychological, educational, and counseling literatures on how individual practitioners can evaluate the outcomes of their own interventions with individual clients. Integral to EBP are the *N*-of-1 research designs specifically discussed and recommended by Sackett et al. (2000). It is not sufficient that the clinician learn about and apply evidence-based treatments in their practice; EBP also mandates that we systematically evaluate our own service outcomes.

Conclusion

We are fortunate in that a growing number of brief treatments and interventions used in crisis situations are being rigorously tested in well-crafted *N*-of-1 and group research designs and are providing evidence of their effectiveness. Short-term treatments have been discussed and practiced in the human services for over 50 years (e.g., Scherz, 1954) and are now being tested using rigorous RCTs (e.g., Evans et al., 2003). Among those short-term treatments that have provisional evidence to suggest usefulness are, among others, interpersonal psychotherapy, for depression; cognitive-behavior therapy, for depression and anxiety disorders; exposure therapy, for panic disorder, agoraphobia, morbid grief, pathological jealousy, obsessive-compulsive disorder, and social and specific phobias; task-centered practice, for school problems; bibliotherapy and computer-based treatments, for anxiety disorders (see Dattilio & Freeman, 2000; Dziegielewski, Shields, & Thyer, 1998).

The policy implications of EBP are considerable (see Grey, 2001); in fact, the model can be applied in nonclinical situations, including community practice (Thyer, 2001a) and managerial practice. EBP is being adopted, to a certain extent, in other countries as well (see Thyer & Kazi, 2004). It is particularly well developed in Great Britain, where the Cochrane Collaboration was founded.

Practitioners in the fields of brief treatment and crisis intervention have the opportunity and the challenge to avail themselves of this emerging knowledge base and of the developing philosophy and approach to service delivery known as evidence-based practice. This is both scientifically tenable and ethically incumbent. EBP builds and expands on prior initiatives in various disciplines, such as the 50-year-old Boulder model of scientist-practitioner training and the empirically supported treatments of the last decade—both of which are found in clinical psychology. EBP also builds on social work's empirical clinical-practice model and is highly congruent with the traditions of applied behavior analysis. EBP presents considerable challenges and opportunities, not only to those of us in the academy who are charged with developing and main-

taining state-of-the-science and state-of-the-art clinical-training programs, but also to those providing clinical supervision to practitioners of brief treatments and to those who are health care providers themselves.

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