CHAPTER 1

Introduction to Evidence-Based Practices

Randy A. Hayes

Simply stated, evidence-based treatment is the use of treatment methodologies for which there is scientifically collected evidence that the treatment works. Much of this book discusses treatments for which there is an overwhelming set of evidence for their effectiveness. But before learning about these evidence-based treatments, before discovering the necessary prerequisites for establishing these treatments within a clinic, agency, or practice, we review the history of evidence-based treatment and discuss the reasons why evidence-based practice has come to the forefront at this time.

EARLY BEGINNINGS

Evidence-based treatment had its earliest contemporary beginnings in the collection of evidence regarding the causes of disease—epidemiology. But in a larger sense, evidence-based therapy began at the start of Western medical care with Hippocrates. The Hippocratic Oath has beneficence at its core—to help or at least do no harm. Perhaps the originator of this oath was considering overt acts of harm, indicating a point that would not be argued even to this day. The healthcare provider shall not knowingly provide a service whose purpose is ultimately harmful rather than helpful. On the one hand, this oath is exceptionally simple. Healthcare providers of any of the myriad of iterations of the past or current healthcare related professions did not, would not, do not provide services or treatments that they believe would ultimately be harmful to their patients, a few notable exceptions aside. However, as often is the case, simplicity can be deceptive and lead the professional down a twisted road: How does the healthcare professional know that the services they provide are ultimately helpful or hurtful?

For centuries, the decision as to the helpfulness or harmfulness of any treatment was dependent primarily on the practitioner’s ethical intent, as well as his or her judgment of the effectiveness of the treatment. However, is ethical intent (that is, the clear intent toward beneficence) and individual observation as to effectiveness sufficient for the judgment of harm or helpfulness of treatment? Sufficient or not, for centuries, ethical intent and individual observation were the only tools available to the healthcare practitioner.

As medical instruction became organized and eventually institutionalized, beneficence in terms of treatment could be considered as following the practices learned as part of the medical education. However, much of the history of such medical education
Introduction to Evidence-Based Practices

preceeded the development of modern scientific understandings and methodologies, including not only bacteriology and epidemiology (and thus the understanding of disease causation) but also the modern methods of collecting evidence in support of scientific theories. Thus, the practices taught in these early times, although beneficent in intent, may not have been beneficent in actual practice. Before the development of these scientific practices, there was no available methodology to determine the beneficence of actual practice. Patients simply got better or they got worse and died. The methodology, including the theoretical thought sets, necessary for the determination of practice beneficence (as compared to intent beneficence), did not exist.

It was not until scientific understanding, methods, and practices came together that practice beneficence had its beginnings. There is no better illustration of this point than the life and work of Florence Nightingale (1820–1910). Nightingale used the collection, analysis, and graphical display of healthcare data from the Crimean War to change the face of healthcare in the United Kingdom.

Nightingale used data (that is to say, evidence) to prove that conditions at the time in military hospitals were not beneficent, but in fact harmful to the lives of the soldiers being treated (Small, 1998). Inventing new forms of graphical representation of statistical analysis, Nightingale showed a statistically significant number of preventable deaths. Much of her data analysis showed the deleterious effects of uncleanliness in terms of healthcare survival. Many of the improvements she instituted based on this evidence had to do with improved cleanliness. Further, Nightingale used this evidence to successfully campaign for improved conditions in military hospitals and in general hospitals. It is interesting to note that illness from lack of cleanliness, now called nosocomial infections, is still cited, some 150 years following Nightingale’s irrefutable proof of the potentially devastating effects of uncleanliness in healthcare, as a significant negative contributor to public health. See Martinez, Ruthazer, Hansjosten, Barefoot, and Snydman (2003) for one example of this continuing concern.

The collection of data regarding the cause, spread, and eventual containment of infectious disease developed slowly into the science of epidemiology during the nineteenth and twentieth centuries. Wade Hampton Front, MD, became the first American professor of epidemiology in 1921 at the Johns Hopkins School of Hygiene and Public Health (Stolley & Lasky, 1995). Joseph Goldberger moved the science solely from the realm of infectious diseases into the study of noninfectious diseases with his concentration on the effects of diet on public health (Stolley & Lasky, 1995) during the same time period. The investigation of the causes of lung cancer was included in the data collection efforts of the epidemiologists also during the early and mid-twentieth century leading eventually to the link with cigarette smoking. Epidemiology as a science held the collection and analysis of disease-related data in terms of the causes and containment of disease as its standard. However, it did not include treatment effectiveness, as such, as a focus.

The collection of medical and health-related data in terms of treatment effectiveness came to the fore, albeit briefly, with the systems of Ernst A. Codman, MD, during the turn of the past century as the science of epidemiology was developing. A graduate of Harvard Medical School in 1895, Codman had a keen interest in all of the aspects of the effectiveness of medical treatment (Brauer, 2001). Codman, an avid collector of data of all kinds, believed that the outcomes of surgery should be openly documented,
monitored, and reported. Developing an elaborate system of recording the results of his own surgeries using a card system, he encouraged other physicians to do the same. Calling his system the “End Results System” (Brauer, 2001). Codman was strongly influenced by engineering concepts and was a friend of efficiency expert Frank Gilbreth. In 1911, Codman opened his own 20-bed hospital in Boston to fully apply his system of tracking the outcomes of the care he provided. Continuing the use of the index card system, each patient was categorized in terms of presenting symptoms, diagnoses (initial and discharge), complications while in the hospital, and status one year following hospitalization. Further, Codman developed a system for identifying medical errors and adverse outcomes, which he not only published, but gave to patients before their treatment (Brauer, 2001). Codman encouraged other physicians and hospitals to follow the same course.

Codman’s “End Results System” processes were way ahead of his time. Perhaps because of Codman’s fierce advocacy of his system, he angered many of his fellow physicians and eventually left the local medical society. His hospital closed due to lack of referrals from his colleagues. Codman then practiced medicine in Nova Scotia and in the army. Eventually returning to Boston and reuniting with Massachusetts General Hospital, he studied the Registry of Bone Sarcoma—a registry that he had initiated. Codman recognized that his “End Result” concepts would not come to fruition in his lifetime. He died in 1940 (Brauer, 2001) although the ideas did not die with him.

Some 32 years following the death of Codman, the cause of evidence-based treatment was taken up by an epidemiologist in the United Kingdom. In 1972, the Nuffield Provincial Hospitals Trust (NPHT) published the landmark work of A. L. Cochrane, MD. The NPHT had invited Cochrane, a well-known and highly respected epidemiologist, to evaluate the United Kingdom’s National Health Service. Titling his work *Effectiveness and Efficiency: Random Reflections on Health Services*, Cochrane called for the use of evidence-based treatment practices.

Cochrane’s evaluation of healthcare services, by his own admission, was crude due to the lack of properly collected evidence. Nevertheless, Cochrane used the techniques available to an epidemiologist, for example, demographics and mortality rates, and so on. He analyzed healthcare services/treatments as compared to healthcare costs and found a huge gap—increased national funding for healthcare services had not led to increased positive outcomes for patients (Cochrane, 1972/1999).

Based on these findings, Cochrane made a series of recommendations regarding the improvement of outcomes by improving treatment. These recommendations focused on the use of applied medical research in the form of random controlled trials to determine those treatments that produced improved health. It is interesting and informative to note that Cochrane discusses both in his introduction and through his evaluation the differences between pure research and applied research. He further devotes one entire chapter to the use of evidence, and another on exploring and defining the meaning of both effectiveness and efficiency as they relate to healthcare services.

The need for these discussions, begun three decades ago, continues to this day both in the field of medical services and behavioral healthcare services. In doing training for the Joint Commission Resources, both on implementing evidence-based practices in behavioral healthcare and in the use of data in this field, the problems noted by Cochrane
30 years ago, as well as Codman 80 years ago, continue to be evident in healthcare and behavioral healthcare. Few clinicians, either in medicine or behavioral healthcare, have had sufficient and meaningful training in research design or data analysis to negate the need for elementary discussion and training so that the healthcare professional who is not a professional researcher, can appreciate, understand, and properly apply the findings of research to their practice or agency. This book, in part, exists to help overcome this continuing need.

Cochrane discussed a third metric—equity—that may be coming more into play this first decade of the new millennium. Equity means effective and efficient healthcare services for all who need them. Cochrane was discussing the disparity of services that were available through the National Health Service in the United Kingdom. This had been a concern discussed a century earlier by Nightingale (Small, 1998). During Nightingale’s time, public hospitals were solely for the poor and indigent. People with means were seen and treated in their homes. By Cochrane’s time, although not as evident as during Nightingale’s time, a disparity of treatment continued, not only between social classes, noted Cochrane, but also between geographic areas.

Although far beyond the scope of this book to discuss in length, equity of services for all people in all places may be becoming an area of concern within the United States. With the severe state budgetary crises following the tragedy of September 11, 2001, many publicly supported behavioral healthcare agencies have seen significant reductions in funding. These reductions have forced agencies to limit both the numbers of and types of consumers who receive healthcare and behavioral healthcare services.

These budgetary restrictions have also limited the staff devoted to evidence collection and analysis in service of evidence-based practice development. At a recent workshop conducted by the author on data analysis, one participant disclosed that his agency was forced to eliminate its research and analysis staff in order to provide basic behavioral health services.

Because of budgetary restrictions and limitations, the use of proven treatments, that is, evidence-based treatments, is absolutely critical, and yet agencies and practices who were in the forefront of the field in terms of having staff to do this needed work, are having to reduce or eliminate staff who are capable of doing this needed work. At some point, directors and boards of agencies will need to ask the same or similar questions Codman and Cochrane were asking many years ago. Can agencies or practices save money by providing treatment that may not be producing any effect? Is it efficient to provide treatment that has not been proven to be effective? Is it efficient in tight budgetary times to either not hire, or to reduce the professional staff who are able to provide the research necessary to “prove” what treatments actually produce statistically significant results? We hope to help you answer these questions, or minimally, understand better the importance of these questions.

Some 40 years following the death of Codman, and within a decade of Cochrane’s work, McMaster University in Hamilton, Ontario Canada, took up the cause by producing a series of articles that helped the healthcare professional begin to address these questions.

The Department of Epidemiology and Biostatistics published a series of five articles in the Canadian Medical Association Journal in 1981 [(124) 5–9] from March
through May entitled “How to read clinical journals.” The series of articles had following subtitles: I. Why to read them and how to start reading them critically; II. To learn about a diagnostic test; III. To learn the clinical course and prognosis of a disease; IV. To determine etiology or causation; and V. To distinguish useful from useless or even harmful therapy (1981a, 1981b, 1981c, 1981d, 1981e). This series is credited (Baker & Kleijnen cited in Rowland & Goss, 2000) as being the actual starting point of the type of evidence-based therapy that this book addresses.

From McMaster University, the advance of evidence-based treatment was pursued vigorously in the United Kingdom as part of a redesign of the National Health Service in 1991 (Baker & Kleijnen as cited in Rowland & Goss, 2000). Not only has the British National Health Service adopted evidence-based practices for medical care, the institution has adopted, as of 2001, a set of evidence-based practices for behavioral health (Department of Health, 2001). These guidelines list the evidence for various treatment methodologies for the following diagnoses: depressive disorders, panic disorder and/or agoraphobia, social phobia, generalized anxiety disorder, posttraumatic stress disorder, obsessive compulsive disorder, eating disorder, somatic complaints, personality disorders, and deliberate self-harm. Also reviewed are “other factors” that impact behavioral health therapy. These practices are available not only for clinicians working within the Department of Health but an abbreviated version is available for potential consumers of the services.

Within the United Kingdom are a number of centers that promote evidence-based treatment research, including the Cochrane Collaboration, a Web site instituted for “preparing, maintaining and promoting the accessibility of systematic reviews of the effects of health care interventions” (http://www.cochrane.de). This collaboration reviews research, based on a set of principles, and makes the reviews available to subscribers. It also conducts workshops and training on this topic. A similar British institution is the Centre for Evidence Based Medicine.

DATA COLLECTION AND APPLICATION: THE RECENT PRESENT

Although data or evidence-collection methodologies have been in use for a variety of scientific endeavors for decades, the application of scientific methodology to prove the effectiveness of various medical treatments has been a long time coming. Further, even as effectiveness evidence has been collected, it has not been used in the healthcare field.

For example, the University of Sheffield evidence-based Web site references a study done in 1963 (Forsyth, 1963) of medical practitioners’ use of prescription medicine. The two-week study indicated that only 9.3% of prescriptions written during the period were specific for the condition for which they were intended. Another investigation in 1973 (Wennberg & Gittelsohn, 1973) documented “serious and inexplicable regional variations in health care providers’ clinical practices.” Thirteen years later, the situation had not changed. The Lohr study (1986) documented the inappropriate overuse or underuse of healthcare services. A study by Brook (1989) called into question the effectiveness of many medical interventions. Six years later, the Rosen study (Rosen, Proctor, Morrow-Howell, & Staudt, 1995) indicated that fewer than 1% of the practice decisions of social
work were justified by empirical findings. In the October 12, 1998, issue of *Time* magazine, Dr. Robert Califf, director of the Duke University Clinical Research Institute estimated that less than 15% of U.S. healthcare is evidence-based.

As recently as 2002, the *CNS News: Neurology and Psychiatry* journal indicated that the American Psychiatric Association’s bipolar disorder best-practice guidelines were not being followed. Reporting on a 1999 APA Practice Research Network Study of Psychiatric Patients and Treatments, 20% of these patients did not receive treatment with a mood stabilizer and 40% did not receive any sort of psychotherapy, both of which are recommended in the APA’s best-practice guidelines (“Bipolar Treatment Guidelines,” 2002).

This article mirrors the findings of “Mental Health: Report of the Surgeon General” (USDHHS, 1999). This extensive report summarized the current state of mental health treatment models, pointing out that there were numerous psychiatric and/or psychological treatments that were of proven value for even the most severe cases of mental illness. The findings also emphasized, however, that these state-of-the-art treatments refined through years of research were not being transferred into actual practice in community settings. Calling this lack of transfer “a gap” that exists between research and application, the report concludes, in part, indicating the reasons this application gap exists. Foremost among the reasons listed for the practice gap is the practitioners’ lack of knowledge of research results. Other reasons cited are the lag time between reporting of research results and translation into practice and the cost of introducing innovations into the various healthcare systems.

Adding to the so-called transfer gap is the response of behavioral healthcare clinicians to the collection and use of data, as well as the use of evidence-based guidelines within their practices. Azocar, Brian, Goldman, and McCarter (2003) studied the use of evidence-based guidelines within managed behavioral healthcare organizations using random control trial methodology. Participants in the study (N = 443) either received guidelines for the treatment of major depression from a general mailing (independently practicing clinicians); received the guidelines from a targeted mailing (client/patient receiving treatment from an independently practicing clinician); or received no guideline (i.e., neither clinician nor client/patient received the guideline). The study showed no effects of the guideline dissemination, either through clinician or client/patient self-report or through analysis of claim data, and so on. We suggest that dissemination strategies other than mailings should be examined to improve the standard of care.

A later study published in the same year may shed some light on this possible reluctance to use evidence-based practice guidelines. Garland, Kruse, and Aaron (2003) studied the attitudes regarding the use of standard outcome measures in practice. Fifty behavioral healthcare practitioners were interviewed individually or in focus groups as to their attitudes regarding the use of outcome measurements. The findings of this study are quite telling: Although all practitioners interviewed received some type of scored assessment profiles on their patients/clients at the initiation of assessment treatment, the vast majority reported that they did not use the measures as part of their treatment planning or monitoring. Further, the clinicians reported that outcome measures were not believed to be clinically useful.
The reader might conclude that clinician/practitioner attitudes regarding receptive uses of evidence-based treatment guidelines as well as the measurement sets that play a significant part of these guidelines, could play a significant role in whether such guidelines would be used. Evidence-based guideline usage may not be swayed by the preponderance of evidence as to the effectiveness of the guideline as much as by the individual clinicians attitude toward the use and usefulness of evidence and guidelines in general. This is one area in terms of the adoption of evidence-based practices that could benefit from significant research.

The so-called transfer gap helps explain the purposes and outline of this book. Six evidence-based practices (sometimes known as the Tool Kit) follow this introductory chapter. These are all practices that have been extensively researched using controlled scientific methodology. These are all practices that have shown outstanding outcomes when applied within the research settings. These practices have all shown exceptional outcomes when applied in a variety of practice and agency settings.

In terms of clinician acceptance, this volume also presents first the various general considerations regarding the state and use of evidence-based treatments within both private practices and behavioral healthcare agencies. A second series of chapters by this author outlines some of the very practical considerations that need to be considered before and during the attempts at implementation of evidence-based practices.

The need for the latter is highlighted by Frances Cotter, MA, MPH (personal communication, September 24, 2003) team leader—Science to Service Program, Center for Substance Abuse Treatment-Division of Services Improvement, the federal sponsor of the Tool Kit development. Cotter has pointed out the need for an examination of the processes within an agency in which evidence-based practices are being installed. “Too often, the substance abuse field has neglected looking into the black box in which we want to place evidence-based practices. If we want to increase the success of these practices, we need to understand what is occurring within the organization and how the organization can support and sustain the evidence-based practices.”

Thus, the last chapters provide an initial look into the “black box” with suggestions for understanding and overcoming possible resistance to evidence-based treatment implementation. CSAT and the Robert Wood Johnson Foundation are in the process of researching both barriers to best practice implementation as well as promising practices for treatment engagement and retention within the substance abuse field. This author’s agency, Sinnissippi Centers, Dixon, Illinois, is part of that research effort. Further, and more to the point of this volume, we present suggestions based on the experiences at this agency in designing and implementing data collection for the development of evidence-based practices regarding treatment of the mentally ill substance abusing client/patient/consumer. These are practices that have been awarded the Joint Commission on the Accreditation of Healthcare 2002 Ernst A. Codman Behavioral Healthcare Award (Hayes, Andrews, Baron-Jeffrey, Conley, Gridley, et al., 2003) and the 2003 American Psychiatric Association’s Bronze Psychiatric Services Award.

The call for the use of evidence-based practices both in healthcare in general, and in behavioral healthcare specifically, has been long in development. From the ancient practitioner’s intuitive collection of the “evidence” of what worked and what did not work through trial and error to the current use of scientific methodologies to discover
what treatment methodologies work and which do not work has been a long and sometimes arduous journey. It has been a journey replete with heroines and heroes, working against the practices and thought patterns of their day to begin the current movement toward evidence-based practices. It is a journey that continues to have heroines and heroes, both in researching the treatment methodologies, and in attempting to implement those proven treatment methods within their own practices and agencies. And it is a journey that we welcome you to join, as we, in our own practices, attempt to live out the oath promulgated so long ago: To help, or at least to do no harm.

REFERENCES


Department of Clinical Epidemiology and Biostatistics, McMaster University Health Sciences Centre. (1981b). How to read clinical II. To learn about a diagnostic test. *Canadian Medical Association Journal, 124*(6), 703–710.

Department of Clinical Epidemiology and Biostatistics, McMaster University Health Sciences Centre. (1981c). How to read clinical III. To learn the clinical course and prognosis of a disease. *Canadian Medical Association Journal, 124*(7), 869–872.

Department of Clinical Epidemiology and Biostatistics, McMaster University Health Sciences Centre. (1981d). How to read clinical IV. To determine etiology or causation. *Canadian Medical Association Journal, 124*(8), 985–990.

Department of Clinical Epidemiology and Biostatistics, McMaster University Health Sciences Centre. (1981e). How to read clinical V. To distinguish useful from useless or even harmful therapy. *Canadian Medical Association Journal, 124*(8), 1156–1162.


