Chapter 16
Clinical Data Mining in the Age of Evidence-Based Practice:
Recent Exemplars and Future Challenges

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ABSTRACT

Clinical Data Mining (CDM) is a paradigm of practice-based research that engages practitioners in analyzing and evaluating routinely recorded material to explore, evaluate and reflect on their practice. The rationale for, and benefits of this research methodology are discussed with multiple exemplars from health and human service settings. While CDM was conceived as a quantitative methodology evaluating the process, intervention and outcomes of practice, it can support qualitative studies encouraging reflectiveness. CDM was originally employed as a practice based research (PBR) consultation strategy with practitioners in clinical settings, but the methodology has been increasingly used by doctoral students as a dissertation research strategy either by itself or in combination with other research methods. CDM has gained international recognition by both social workers and allied health professionals. The authors present CDM as a knowledge-generating paradigm contributing to "evidence-informed" practice rather than "evidence based practice."

INTRODUCTION

In the course of their work, social workers and other allied health professionals routinely generate and record massive amounts of qualitative and quantitative information concerning patient needs, services provided and outcomes achieved. However, other than for accountability purposes, this information is rarely retrieved, converted into data-bases and systematically analyzed by those practitioners who have generated it. At the same time, these professionals are under increasing pressure to integrate research into their practice and to employ research-based interventions.

Within social work in the United States and to a lesser extent elsewhere, Evidence-based Practice (EBP) is the prevailing paradigm of practice-research integration (Gambrill, 2006; Gibbs &

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Gambrill, 2002) whereby practitioners are encouraged to conduct exhaustive and critical reviews of research literature in quest of interventions that are "proven" to be effective based on the accumulated evidence of randomized clinical trials (RCT's) and meta-analyses of these studies. Alternatively, EBP proponents advocate providing practitioners with "manualized" guides to practice, based on the results of systematic reviews and meta-analyses conducted by academics. Clearly, this idealized model of practice-research integration is fashioned according to western medical practice and drug studies.

Unfortunately however, there are many reasons why this approach to social work knowledge generation and practice integration is problematic. One major reason is that RCT's are not especially suitable for studying social work interventions (Epstein, 2001). Another is that EBP advocates conceptualize practitioners as mere consumers of knowledge, disparaging their accumulated "practice wisdom" as "non-scientific" at best and "quackery" at worst. In so doing, they minimize the potential of practitioners as knowledge producers and further alienate them from the value of research.

This chapter describes an alternative paradigm of practice-knowledge generation that engages practitioners in evaluating and reflecting on their own practice by systematically collecting, analyzing and interpreting client and patient information that practitioners themselves have created. We call this analysis of routinely available information "Clinical Data-Mining" (CDM) (Epstein, 2001). Although CDM was "invented" in the context of American social work practice, it has been effectively disseminated by the authors and applied by social work practitioners in Australia, Hong Kong, Israel, Singapore and Sweden. In addition, the method has been productively employed by allied health professionals other than social workers (e.g., music therapists, occupational therapists, physiotherapists, psychologists, podiatrists, speech pathologists, etc.) as well as by multi-disciplinary teams of health professionals. Finally, in a few social work doctoral programs, CDM has been accepted as a legitimate research methodology for PhD dissertation research either in combination with other more established research approaches or in its own right.

Thus, in a decade's teaching, training and consultation experience of the authors—together and separately—CDM has proven to be an especially congenial strategy for engaging practitioners in research, for testing research-based knowledge as well as practice wisdom, and for producing practice-relevant knowledge for social work and allied health professions.

The purpose of this paper is to:

- To distinguish between EBP as a Research-Based Practice (RBP) strategy and Practice-Based Research (PBR)
- To define CDM and identify it as one of a number possible PBR strategies
- To distinguish CDM from conventional data-mining, from Secondary Analysis (SA) and from Chart Reviews
- To present and illustrate a typology of CDM approaches
- Describe the basic steps in the CDM process and the methodological variations that are possible offering exemplars of each
- Discuss CDM's strengths as well as its limitations
- Discuss future potential of CDM

BACKGROUND

Although the social work research potential of available information as well as its limitations were clearly articulated decades ago by Shyne (1960), academic researchers largely ignore her prescient writing on the subject. Emphasizing the inadequacies of available agency-based data (e.g., missing information, problems of validity and reliability, etc.) researchers such as Reamer (1996)