Clinical Data-Mining in Practice-Based Research: An Empowering Workshop for Practitioners

Irwin Epstein, PhD
Silberman School of Social Work
Hunter College, City University of New York

Herman Lo, PhD
School of Social Work
University of Hong Kong
“An unexamined life is not worth living.”
(Plato, Athens, a long time ago)

“An unexamined case-record is not worth recording.”
(Epstein, Hong Kong, December 10, 2006)
Overview of CDM Workshop

- Introduction
- What do we mean by Practice-based Research and how does it differ from Evidence-based Practice?
- What is Clinical Data-Mining (CDM)?
- Methodological Principles of CDM—Strengths & Limitations
- Case Illustrations of various types of CDM from various fields
- CDM in a Hong Kong Mental Health agency (Dr. Herman Lo)
- What CDM tells us about the importance of context—what Herman Lo taught me
- Discussion of Workshop participant ideas for CDM studies
- Conclusion and Evaluation
Practitioners’ use of research-based principles, designs and information gathering techniques, within existing forms of practice, to answer questions that emerge from practice in ways that inform practice (Epstein, 2001).

In simpler words:
“research by practitioners for practitioners”.
Both are strategies of practice-research integration
They represent a continuum rather than a dichotomy
EBP refers to five “levels of evidence” but privileges “gold standard” RCT’s whereas PBR treats all five types of evidence as equally valid & equally imperfect.
EBP favors quantitative methods whereas PBR is methodologically pluralist & mixes methods
EBP favors RCT designs whereas PBR generally rejects them
EBP emphasizes causality and generalizability whereas PBR emphasizes relevance to the practice context and applicability
EBP “Hierarchy of Evidence”

- RCT
- Quasi-Exp
- Correlational
- Qualitative
- Case Studies
EIP “Wheel of Evidence”

RCT’s → Qualitative

Quasi-Experiments → Case Studies

CDM’s → Quasi-Experiments
What Is Clinical Data-Mining (CDM)?

CDM is a practice-based research strategy by which practitioner-researchers systematically retrieve, codify, analyze and interpret available qualitative and/or quantitative information from their own records and reflect on the practice and policy implications of their findings.

“Mining for silver”
Purposes of CDM?

- To Refine & Enhance Practice Wisdom
- To Describe & Evaluate Social Work Practice
- To Promote “Evidence-Informed” Practice
- To Identify Best Practices
- To Promote Worker “Reflectiveness”
What Are the Basic Elements of CDM?

- Inductive (begins with practice needs & driven by practice wisdom)
- Quantitative and/or Qualitative
- Retrospective (but can become prospective)
- Descriptive or Quasi-Experimental
- Primarily Formative (but can approach Summative)
Why Mine Clinical Information?

- Current Availability of Rich Clinical Information
- Future Availability of Electronic Records
- Unintrusive
- Non-Reactive
- Relatively Inexpensive
- Efficient Sampling
Why Not?

- Dirty
- Labor Intensive
- Missing Data & Other Ambiguities
- Validity and Reliability Issues
- Key Variables May Not Be Available
- Surfaces Existing Information Systems Problems
Who Can Do CDM?

- Individual workers
- Social work units
- Multi-disciplinary Teams (e.g., Allied Health, Physicians & Social Workers, etc.)
- Social work students at all levels
Exemplar CDM Need Studies

- Intimate Partner Violence Risks in OBGYN & Neonatal Clinic Patients (Quantitative)
- Fetal Abnormality Study (Qualitative)
- Adolescent Risk Studies (Quantitative)
- Early Young Adult Psychosis Study (Qualitative & Quantitative)
- Carers of Elderly Relatives via Telephone Service Requests (PDIA) (Quantitative)
- Juvenile Diabetes “Frequent Flyer” Study (Quantitative)
Exemplar CDM Monitoring or ("Fidelity") Studies

- Renal Dialysis Intervention Study (Quantitative)
- Music Therapy With Terminal Cancer Patients (Qualitative)
- Intensive Family Preservation Study (Quantitative)
Exemplar CDM Outcome Studies

- Psycho-social Factors in Liver Transplant Mortality (Quantitative)
- Renal Dialysis Interventions & Outcomes (NKF) (Quantitative)
- Adolescent Mental Health Tx Termination Study (Qual/Quant/Qual)
Exemplar CDM Doctoral Dissertations

- A. Chow (2005) Bereavement Experience of Chinese Persons in Hong Kong
- D. Hanssen (2003) Intensive Family Preservation Services
- V. Kochkine (2006) Depressive Symptoms & Academic Achievement in Culturally Diverse Adolescents
- D. Mirabito (2000) Adolescent Mental Health Tx Termination
- G. DeFraia (2010) Organizational Response to Traumatic Events
- F. Wai (2007) Experience of Breast Cancer Tx
- L. VanBrackle (2010) Profitability of Social Entrepreneurship
- H. Lo (2011) Group CBT for Depression and Anxiety Among Hong Kong Chinese

- Methodological principles of CDM
- 7 Peer-reviewed CDM studies conducted & written by practitioners at Mt. Sinai, Australia & Israel on pre-natal risk, juvenile diabetes, adolescent mental health, liver transplant, end-stage renal disease, etc.
- Exploration of the use of CDM for creating analogs to RCT’s
11 peer-reviewed studies co-authored by combinations of 25 different practitioners on adolescent mental health needs & wants by age, gender & race
Topics include, safety & violence, mental health, sexuality, education, substance use, racism, family & friends, etc.
Clinical significance of “Don’t Know”
A “data-base” isn’t always a “Data-Base”

- 8 peer reviewed articles by Australian Allied Health & Social Work practitioners
- Clinical to administrative practice issues
- Topics including emergency services, music therapy, polio services, rapid response teams, fetal abnormalities, young adult psychiatry, etc.

- 11 CDM studies co-authored by teams of occupational therapists, physical therapists, social workers and speech pathologists
- Topics include post-stroke aphasia, draught & farm family mental health, low back pain, traumatic brain injury, hepatitis C “treatment trifecta”, “thyroid voice”, etc.

Lo, H., Epstein, I., Ng.,S., Chan, C. & Kwan, C. When cognitive behavioral group therapy works and when it doesn’t?: Clinical data-mining good and poor outcomes for depression and anxiety among Hong Kong Chinese. *Social Work in Mental Health*, 9(6), 456-472.
What I learned from Herman’s study

- How agencies choose “best evidence” interventions
- The strengths and limitations of “effect size”
- The importance contextual influences of treatment effectiveness
- The possibilities of usefully combining CDM and RCT
Steps In The CDM Process

- Prospect All Data Sources (e.g., case records, medical records, computerized information, etc.)
- Assess Core Samples for Available Variables
- Identify Key Practice Questions That are Answerable
- Consult Research Literature for Prior Studies
- Create Qualitative and/or Quantitative Retrieval Tools
- Make Sampling & Design Decisions
- Promote Reliability & Validity
- Collect & Plan the Analysis
- Analyze Data
- Interpret & Utilize Findings
- Disseminate Findings
Primary Benefits of CDM Studies

- More Comprehensive Assessment of Client Needs
- More Systematic Information About Clinical and Program Fidelity
- Qualitative & Quantitative Information Concerning Client Outcomes
- Information About Linkages Between Interventions & Outcomes
- Information About Important Contextual Influences
Secondary Benefits of CDM Studies

- Worker Mindfulness, Cultural Sensitivity & Self-Reflection
- Disciplinary & Inter-Disciplinary Team-Building
- Empowered Feeling Regarding Research Capacity
- Pride In Professionalism
- Intellectual & Emotional Replenishment
CDM Fosters Reflective Practice By Helping Practitioners to:

- Own what they know
- Acknowledge what they don’t know
- Pursue what they need to know
- That is the true “gold standard” of professional practice
Next Steps for You

- Identify a decision-making issue in your practice that would benefit from a CDM study
- What information is currently available?
- Does it concern client characteristics, interventions and/or outcomes?
- Would it best be studied qualitatively, quantitatively or with both methods?
- What form of data-analysis should be employed?
- What resources are required to do it?
- Who will do what?
- Do It!
And if you want to know how to do CDM

Available at Amazon.Com & Oxford University Press.Com
The End
"That will be the gold standard by which all other naps are judged."